

August 31, 2018

Work Plan
Waste Management of Iowa, Inc.
Former Recycletronics
1220 Steuben Street Site

Sioux City, Iowa A2018





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Approval Page

Site is approved for implementation.	, 1220 Steuben Street, Sloux City, low
Donald A. Smith, P.E.	Date
Market Area Engineering Manager	
Waste Management of Iowa, Inc.	
Rebecca Wenner	Date
Remedial Project Manager, EPA Region VII	

Document Revision Log

Revision	Date	Primary Changes
0		



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Appendices

Appendix A Example Hazardous Waste Manifest and Example Special Waste Manifest

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Appendix C Site-Specific Health and Safety Plan

Acronyms

CAFO Consent Agreement and Final Order

CFR Code of Federal Regulations

CRT Cathode Ray Tube

EIT Engineer in Training

EPA Environmental Protection Agency

HAZWOPER Hazardous Waste Operations

QA/QC Quality Assurance and Quality Control

RCRA Resource Conservation and Recovery Act

Site 1220 Steuben Street, Sioux City, Iowa

SOP Standard Operating Procedure

TCLP toxicity characteristic leaching procedure

WMI Waste Management of Iowa, Inc.

Definitions

Hazardous Waste means a hazardous waste as defined in 40 CFR § 261.3.

<u>Special Waste</u> means televisions, televisions in consoles, monitors, computers, keyboards and other electronic waste with dirt, wood, cardboard, plastic and other debris including small amounts of broken Cathode Ray Tubing (CRT) glass.

1.0 Project Overview

Waste Management of Iowa, Inc. (WMI) has entered into Consent Agreement and Final Order (CAFO), Docket No. RCRA-07-2018-0248, July 17, 2018, with the Environmental Protection Agency (EPA) Region 7 to remove Hazardous Waste and Special Waste from a WMI-owned property located at 1220 Steuben Street in Sioux City, Iowa (Site). Generally, the work will consist of collection, transportation, and disposal of Hazardous Waste and Special Waste that a lessee to WMI had accumulated at the Site.

1.1 Purpose of this Document

This Work Plan describes the collection, transportation, and disposal of Hazardous Waste and Special Waste that will be performed to satisfy the requirements of the CAFO. The Work Plan is organized as follows:

- Section 1.0 Project Overview
- Section 2.0 Site Background
- Section 3.0 Work Plan Elements



2.0 Site Background

2.1 Site Background

The Site is owned by WMI. On July 19, 2016, the Site was leased to Mr. Aaron Rochester, president of Siouxland PC and Electronics Recycling, LLC, who operated the Site as Recycletronics. The lessee abandoned Hazardous Waste and Special Waste that requires removal from the Site. WMI terminated the lease.

2.2 Site Description

The area surrounding the Site consists of commercial and industrial properties including a WMI maintenance shop to the north, a Ready Mix concrete facility to the east and west, and an insulation supply company to the south. The Site building includes an office area, a large open, split bay and a ramp, and several large doors for moving materials in and out of the building with heavy equipment.

The Site tenant left a number of Gaylord containers inside and outside the Site building containing broken Cathode Ray Tube (CRT) glass and mixed waste consisting of televisions, televisions in consoles, monitors, computers, keyboards, and other electronic waste with dirt, wood, cardboard, plastic, and other debris including small amounts of broken CRT glass. Some wastes are not inside Gaylord containers but rather are piled inside and outside the Site building. Gaylord containers are stacked two to three boxes high in many places and many Gaylord containers in and outside the Site building are not intact due to improper stacking and weather.

3.0 Work Plan Elements

3.1 Name and Qualifications – Project Manager

Todd Wilson, CHMM WWMT – HDR Project Manager

Todd Wilson will serve as the Project Manager and oversee daily operations of the HDR field staff and the various contractors involved with the project. Todd has more than 27 years of environmental experience and is a Certified Hazardous Materials Manager. He has been involved in investigation and remediation projects at numerous sites across the country including Resource Conservation and Recovery Act (RCRA) and Superfund sites. He specializes in and advises on the performance of chemical sampling, testing, and analysis of wastes on projects to verify regulatory compliance. Todd has provided construction and remediation supervision for a number of hazardous, toxic, and radioactive waste sites. He has completed Hazardous Waste Operations (HAZWOPER), 8-Hour refresher, Supervisor, and Railroad Roadway Worker Protection training. Contact information for Todd is:

HDR

8404 Indian Hills Drive
Omaha, NE 68114-4098 **D** 402-399-1283 **M** 402-651-3422
twilson@hdrinc.com

Don Smith, PE (Wisconsin) – WMI Engineering Manager and Project Coordinator

Don Smith will serve as WMI's Project Coordinator. Don has more than 35 years of environmental experience having worked in the mining industry, as a state regulator, as an environmental consultant, and in the waste management industry. He has managed various investigations and remediation projects at numerous sites. He specializes in mining, landfill, recycling and composting permitting, construction, and operations; materials handling operations; storm water management; and regulatory compliance. Contact information for Don is:

Waste Management of Iowa, Inc.

W132 N10487 Grant Drive Germantown, WI 53022 M 262-806-6039 dasmith@wm.com



Name and Qualifications – Oversight Contractor – HDR 3.2

WMI has selected HDR as the oversight contractor. HDR's team consists of the following individuals:

Mike Classen, PE (Nebraska and Iowa) – HDR Project Coordinator

Mike Classen will serve as HDR's Project Coordinator and is a licensed Professional Engineer in Nebraska and Iowa. Mike's 10 years' experience includes solid and hazardous waste engineering. Mike leads facility planning, design, construction, and operations, as well as environmental permitting and compliance projects.

Joe Shields, PE (Nebraska) - HDR Project Quality Assurance and Quality Control Manager

Joe Shields will provide Quality Assurance and Quality Control (QA/QC). Joe is a civil engineer with more than 29 years of diverse experience in environmental engineering, including Superfund remediation sites. He has been involved with the investigation, remedial design, and remedial construction at dozens of environmentally impaired properties across the country. Joe has 40-Hour HAZWOPER, 8-hour refresher, and Supervisor training.

Austin Broshar – HDR Project Field Technician

Austin Broshar is an Engineer in Training (EIT) with 4 years of construction, permitting, reporting, plan preparation, and sampling experience. Austin has served as Construction QA auditor on several large construction projects. He has completed the HAZWOPER and 8-hour refresher trainings.

Jason Gilbert, PE (Nebraska) – HDR Project Field Technician

Jason Gilbert has 20 years of experience in environmental engineering and consulting with emphasis in air quality management issues, regulatory compliance, environmental cleanup, and project management. He has completed soil and groundwater investigations for numerous industrial clients. He has completed the HAZWOPER and 8-hour refresher trainings.

3.3 Waste Identification and Marking

Waste that will be removed from the Site pursuant to CAFO obligations includes waste that is stored in Gaylord containers and waste in piles both inside and outside the Site building.

Each Gaylord container of waste and each discernible pile of waste will be visually evaluated and designated as either Hazardous Waste or Special Waste in accordance with the definitions of those terms on Work Plan page ii. If a Gaylord container of waste or waste pile contains predominantly intact CRT computer monitors, that Gaylord container of waste or waste pile will be designated Hazardous Waste.

Gaylord containers of waste and waste piles determined to be Hazardous Waste will be marked with and "H" in green fluorescent paint.



Gaylord containers of waste and waste piles determined to be Special Waste will be marked with an "S" in orange fluorescent paint.

As to both Hazardous Waste and Special Waste, the fluorescent marking will make clear the extent of each Gaylord container and the extent of each pile to ensure that all waste at the Site is marked.

Wastes that are not crushed CRT glass and Special Waste as defined above (such as a container of material that is not e-waste) will be evaluated applying the traditional federal Solid Waste Disposal Act waste evaluation process to determine whether the waste is Hazardous Waste. If the waste is designated as Hazardous Waste it will be marked "H" with green fluorescent paint. Remaining waste on Site not determined to be Hazardous Waste pursuant to such determination will be marked "S" with orange fluorescent paint.

3.4 Loading and Transport of Hazardous Waste and Special Waste

Hazardous Waste and Special Waste Loading 3.4.1

WasteByRail is an assumed name of Waste Management of Oregon, Inc. WasteByRail specializes in hazardous waste transportation and logistics management nationwide. Company information and expertise is described at www.wastebyrail.com. WasteByRail will handle the logistics for Hazardous Waste and Special Waste loading and transport.

WasteByRail will contract with Tull Crane & Rigging, LLC to provide the heavy equipment and trained personnel to conduct loading of the Hazardous Waste and Special Waste. After the Gaylord containers of waste and waste piles have been marked as described in Section 3.3, forklifts or front-end loaders will be used to load the Hazardous Waste and Special Waste into the designated trucks or containers. Hazardous Waste will be loaded into intermodal rail containers with aluminum hardtops. Special Waste will be loaded into tarp-covered dump trucks and/or tarp-covered roll-off boxes.

3.4.2 **Hazardous Waste Transportation**

WasteByRail will contract with Tull Transportation, LLC to transport the loaded intermodal rail containers by truck to the BNSF designated trans-load site located in Sioux City at 1801 Highway 75 N, for staging and rail transit to the Chemical Waste Management of the Northwest, Inc. landfill in Arlington, Oregon. Each load will have a Hazardous Waste manifest. An example Hazardous Waste manifest is provided in Appendix A. Transportation will be in accordance with applicable 40 CFR Part 263 requirements.

Transportation of Hazardous Waste from the Site to the trans-load site will be completed by:

Tull Transportation, LLC 27055 South Tallgrass Ave, Suite 1 Sioux Falls, SD 57108 EPA ID# APPLICATION PENDING (will be provided when received)



Intermodal rail containers will be stacked onto railcars and then the containers transported from Sioux City to Seattle, Washington using BNSF Railway and then transported by Union Pacific Railroad Company to Chemical Waste Management of the Northwest, Inc. landfill in Arlington, Oregon.

- **BNSF** Railway 176 East 5th Street St. Paul, MN 55101 EPA ID MND 048341788
- Union Pacific Railroad Company 1400 Douglas St Omaha, NE 68179 EPA ID NED 001792910

3.4.3 **Special Waste Transportation**

Waste Management of Iowa, Inc. will transport Special Waste to the Dickinson County Landfill using tarp-covered dump trucks and/or tarp-covered roll-off boxes. If necessary, additional Waste Management of Iowa, Inc. approved transporters will be engaged. Each load will have a Special Waste manifest. An example Special Waste manifest is provided in Appendix A.

Transportation of Special Waste from the Site to the Dickinson County Landfill. will be completed by:

 Waste Management of Iowa, Inc. 1001 Fannin Street Suite 4000 Houston, Texas 77002

3.4.4 **Disposal Facilities**

Hazardous Waste will be disposed of at the Chemical Waste Management of the Northwest landfill:

Chemical Waste Management of the Northwest, Inc. 17629 Cedar Springs Lane Arlington, Oregon 97812 P 866-909-4458 Part B Operating Permit: ORD 089452353

Special Waste will be disposed of at the Dickinson County Landfill:

Dickinson Landfill, Inc. 2575 190th St Spirit Lake, IA 51360



Landfill Permit 3O-SDP-01-75P

WMI is authorized to dispose of Special Waste in the Dickinson County Landfill. pursuant to the following documents, copies of which are in Appendix B to this Work Plan.

- Out of Planning Area Waste Flow Tacking Authorization dated February 23, 2018.
- Waste Management of Iowa, Inc. March 16, 2018, request for EPA authorization for disposal of "mixed waste" (that is, Special Waste) in the Dickinson County Landfill.
- EPA Region 7 June 25, 2018, authorization for disposal of Special Waste from 1220 Steuben Street, Sioux City, under Consent Agreement and Final Order RCRA-07-2018-0248 in the Dickinson County Landfill.
- IDNR Request for Special Waste Authorization dated August 30, 2018.

3.5 Site Cleaning and Confirmation Testing

Active work areas, inside and outside the Site building will be inspected regularly to determine whether the area should be swept. Areas will be swept periodically during waste removal activities to minimize dust and the tracking of waste materials. After the last load of waste is removed from the Site, the entire work area will be swept. The debris swept up will be disposed of as Hazardous Waste.

Note that a portion of the area south of the Site building where waste will be removed is gravel surfaced. In this graveled area, the final cleaning will consist of scraping off the top 1 to 2 inches of gravel and placing the scraped material into containers. One representative sample of this scraped material will be collected from each container and tested for toxicity characteristic leaching procedure (TCLP) lead. If the material exceeds the 40 CFR § 261.3 TCLP level for lead, the material will be disposed of as Hazardous Waste. If the material does not exceed TCLP lead, the material will be disposed of as a Special Waste.

After the final Site inspection to ensure sweeping and removal of all debris has been completed, four confirmation soil samples at 6-inch depths, locations to be identified in the field, will be collected and analyzed for TCLP lead.

3.6 Site Project Management

HDR will provide Site project management in accordance with applicable state and federal laws and regulations during all activities carried out under this Work Plan. A Project Field Technician will be on site at all times when waste identification and loading and removal activities are occurring. The Project Manager is expected to be onsite through the project start-up phase and typically once or twice per week thereafter. The Project Manager will be readily available when waste identification and loading and removal activities are occurring at the Site. The Project Manager has the authority to act on behalf of WMI. Site project management includes, but is not limited to, activities such as:



- Managing the implementation of the EPA-approved Work Plan.
- Coordinating the daily activities of the parties involved in the clean-up project.
- Identifying and marking Hazardous Waste and Special Waste so it is clearly differentiated for all contactors.
- Preparing a daily log documenting weather conditions, parties actively working on the project Site, and activities conducted, including summaries of the Hazardous Waste and Special Waste removed from the site and photo-documenting activities.
- Providing completed daily logs to the Project Manager and the WMI Project Coordinator by the next business day.
- Coordinating regularly scheduled on-Site project status meetings and teleconferences with the project team.
- Implementing the Site-Specific Health and Safety Plan (Appendix C).
- Gathering the information required for and developing the required Project Milestone Reports.

3.7 Schedule

The project schedule is very dependent on contractor availability, weather conditions, and the final EPA approval of the Work Plan. Negotiations with our contractors and team members indicate that they should be able to mobilize to the Site and begin work with 30 days' notice of EPA Work Plan approval.

The project will begin with the waste identification and marking of the wastes and the removal of the waste outdoors. The work will then move to the waste within the Site building. The work will continue until it is completed or until weather creates conditions that present risk to human health or the environment or prevents compliance with the Site-Specific Health and Safety Plan. In the event of inclement weather conditions, work will be stopped and not be resumed until conditions are safe. The stopping of work under the conditions identified above shall not require invocation of *Force Majeure* under the CAFO.

If the Work Plan is approved in early September, WMI is prepared to mobilize to the Site and begin work as soon as possible as described above. If the Work Plan approval is received in late September or after, the project schedule will be adversely affected by winter weather conditions, necessitating a seasonal shutdown with the completion of the project in the spring/summer of 2019. Therefore, if the approval of the Work Plan occurs in late September or later, the Work Plan implementation start date will be late May 2019.

Work will be scheduled on a 5- to 6-day work week in an effort to accelerate the work and avoid inclement weather. Assuming favorable weather and no equipment, trucking, or railroad issues, it is anticipated that the waste removal phase of the project will take 6 to 8 weeks. After the waste removal phase has been completed, the final Site sweeping, material removal from the southern area, and soil sampling will be performed. Note, if the ground is frozen or snow covered before the final Site cleaning can be completed; it will be rescheduled to May 2019 when the conditions will allow for completion of an effective final cleaning.



Note: if at any time weather presents conditions that present risk to human health or the environment or prevents compliance with the Site-Specific Health and Safety Plan, work will be stopped and not be resumed until conditions are safe. Examples of weather conditions that will stop work include, but are not limited to, conditions identified in the Site-Specific Health and Safety Plan as presenting possible cold or heat stress to workers and precipitation creating muddy, slippery, frozen, or snow covered conditions preventing safe walking and equipment operation or creating a risk of environmental impact.

3.8 **Project Milestones**

Project Milestones for reporting in accordance with CAFO Final Order, paragraph 7 include the following:

- 1. Removal of all outdoor waste within 15 days of completion.
- 2. Removal of all indoor waste within 15 days of completion.
- 3. Interim Completion Report 60 days after last shipment of Hazardous Waste to Chemical Waste Management of the Northwest, Inc.
- 4. Completion Report 120 days after the last shipment of Hazardous Waste to Chemical Waste Management of the Northwest, Inc.

3.9 Health and Safety Plan

A project Health and Safety Plan is provided in Appendix C.

3.10 Project Start – Mobilization

In accordance with CAFO Final Order, paragraph 5j, email notification will be sent to the EPA representative (Rebecca Wenner), a minimum of 5 days before any on-site work at the Site to allow EPA or its representatives to observe work being performed. The email will provide a description of the work expected to be performed and the date, times, and location of the work.



Appendix A

Example Hazardous Waste &

Special Waste Manifests



Attachment A-1
Example Special Waste Manifest



NON-HAZARDOUS MANIFEST

	NON-HAZARDOUS MANIFEST	1. Generator's US EPA	A ID No. Ma	anifest Doc N	No.	2. Page 1	of					
	3. Generator's Mailing Address:	Gene	erator's Site Address (If d	r's Site Address (If different than mailing): A. Manifest Number WMNA								
	A Communication of the communi						B. State C	B. State Generator's ID				
	4. Generator's Phone		T									
	5. Transporter 1 Company Name		6. US EPA II	Number		C. State T	ransporter's I)				
						D. Transp	orter's Phone					
	7. Transporter 2 Company Name		8. US EPA II	Number		E. State T	ransporter's ID)				
						F. Transpo	orter's Phone					
	9. Designated Facility Name and Site Ad	ddress	10. US EPA	ID Number								
						G. State F	The second secon					
						H. State F	acility Phone					
G	11. Description of Waste Materials				ntainers	13. Total	14. Unit	I. N	lisc. Commer	nts		
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	J. Additional Descriptions for Material	s Listed Above		K. Dispos	al Location							
				Call								
	BILL TO:			Cell	_			Level				
ı	15. Special Handling Instructions and Ad	dditional Information		Gild						_		
	This applies to Non-Hazardous Materials											
1	Purchase Order #		EMERGENCY CONT.	ACT / PHONE	NO.:							
	16. GENERATOR'S CERTIFICATE:											
	I hereby certify that the above-described	d materials are not ha	zardous wastes as defin	ed by CFR P	art 261 or a	ny applicable	e state law, ha	ve been fu	lly and			
	accurately described, classified and pack	kaged and are in prop	er condition for transpor	tation acco	rding to ap	plicable regu	lations.					
	Printed Name		Signature "On behal	f of"				Month	Day	Year		
_	17. Transporter 1 Acknowledgement of	Receipt of Materials										
T R A N S	Printed Name	receipt of Waterials	Signature					Month	Day	Year		
N S			S.B.Ideare					- Wienen	50,	Tour .		
PO	18. Transporter 2 Acknowledgement of	Receipt of Materials	T ,	,	At .							
P O R T E	Printed Name	A. C.	Signature					Month	Day	Year		
E R												
-	19. Certificate of Final Treatment/Dispo	ical										
F	I certify, on behalf of the above listed tre		to the best of my knowle	dge the sh	ove-describ	ned waste w	as managed in	complian	re with all			
F A C	applicable laws, regulations, permits and			age, the ab	OVE UESCIII	Jeu waste W	as manageu II	Compilario	with all	,		
-	20. Facility Owner or Operator: Certification			overed by th	is manifest							
7	Printed Name		Signature					Month	Day	Year		



Attachment A-2
Example Hazardous Waste
Manifest

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Appendix B

Documents Authorizing Special Waste Disposal in Dickinson County Landfill



Attachment B-1

Executed copy of the Out of Planning Area Waste Flow Tracking Authorization

dated February 23, 2018



Out of Planning Area Waste Flow Tracking

lowa Administrative Code (IAC) 567-101.4 states that if a city or county facility refuses any particular solid waste type for management or disposal, the city or county facility must identify another waste management facility for that waste within the planning area. In the case of special waste, if no other waste management facility for that waste type exists within the planning area, the city or county must, in cooperation with the waste generator, establish or arrange for access to another waste management facility. Municipal solid waste sanitary disposal projects are required to maintain written approval from both the department and the planning area of origin in order to accept any lowa-generated waste from outside the planning area. The following information is intended to satisfy the requirements of IAC 567-101.4.

Solid Waste Refusal: Name of sanitary disposal project, e.g. landfill or transfer station, refusing solid waste type: Gill Landfill, Nebraska Solid waste comprehensive planning area of waste origin: Sioux City Planning Area Solid waste type: A combination of tv's, wood, plastic, dirt, computers, keyboards etc. mixed together in piles. Waste generator, if known: Recycletronics; abandoned, site owned by Waste Management (WM). WM working w/EPA.							
Solid waste quantity and timeframe, if known: 500 tons (preliminary estimate) limited access							
Who was contacted: Gerard Hamblin Area Engineer 2/23/18 Name Position Date							
Solid Waste Comprehensive Planning Area of Waste Origin Approval: As the responsible official for the solid waste comprehensive planning area where the waste originated, I certify that no other waste management facility for the waste exists within the planning area, and in cooperation with the waste generator, access to the sanitary disposal project listed above has been arranged. Signature of Responsible Official: Printed Name: MEUSSA CAMPBELL Phone: 712-899-8776							
Once the portions above are completed and signed, please email, fax or send to: Leslie Goldsmith, Land Quality Bureau, 502 E 9 th St, Des Moines IA 50319, Email: <u>Leslie Goldsmith@dnr.lowa.gov</u> , or Fax: 515-725-8202.							
Iowa Department of Natural Resources Approval: The DNR approves of solid waste generated outside of the planning area of origin being accepted by the sanitary disposal project listed. Solid waste received from outside of the planning area of origin must be properly recorded on the Quarterly Solid Waste Fee Schedule and Retained Fees Report.							
Signature of DNR Approval: Wic Goldsmith Date: 425/18							
Printed Name: Les lie Goldsmith Phone: 515725 8319							



Attachment B-2

Waste Management March 16, 2018, request for EPA authorization for disposal of "mixed waste" (i.e., special waste) in Dickinson County Landfill



WASTE MANAGEMENT

W132 N10487 Grant Drive Germantown, Wisconsin 53022

March 16, 2018

ATTORNEY-CLIENT PRIVILEDGE

Ms. Rebecca Wenner, Physical Scientist U.S. Environmental Protection Agency Region 7 Kansas, Missouri, Iowa, Nebraska Air & Waste Management Division 11201 Renner Bivd. Lenexa, KS 66219

RE:

1220 Steuben Street Removal Management of Special Wastes

Dear Ms. Winner:

Thank you for a good meeting on February 15, 2018 to discuss the basic approach that Waste Management of Iowa will take to address disposal or recycle of the waste materials left at the 1220 Steuben Street, Sloux City, Iowa facility by Slouxland PC and Electronic Recycling LLC. I outlined how Waste Management intends to categorize and dispose of solid, special and hazardous waste that is at the facility. As I explained, there are large amounts of "mixed waste" in containers and piled both inside and outside the building in the form of televisions, televisions in consoles, monitors, computers, keyboards, and other e-waste with dirt, wood, cardboard and plastic atc. and which Waste Management intends to dispose of as special waste in its Dickinson County Landfill in Spirit Lake, Iowa. The landfill is authorized to accept special waste.

As you can see from the attached, IDNR "Out of Planning Area Waste Flow Tracking" form, the Sloux City Solid Waste Comprehensive Planning Area has released the waste for disposal at Dickinson as opposed to the solid waste planning area designated landfill. The next and final step for finalizing the plan to dispose of the mixed waste as special waste at Dickinson is to satisfy the request of Susan Johnson of IDNR that Waste Management obtain written approval from EPA that states the mixed waste that includes CRTs, keyboards, etc. (as described on the attached form) may be landfilled. IDNR would follow with completion of its approval process for disposal of the mixed waste at Dickinson. IDNR has requested this because EPA is taking the lead on cleanup of the Steuben Street facility and because lows is not delegated the RCRA program. Please note, as we discussed at the February meeting, the containers or piles of mixed waste have only insignificant, if any, crushed CRT glass.

I am writing to ask for this EPA approval while EPA and Waste Management work out the CAFO language because what Waste Management proposes for work plan components of the CAFO is dependent on the special waste disposal in Dickinson. I would greatly appreciate your review and written approval for disposal of the mixed waste as described above and on the attached IDNR form in the Dickinson County Landfill.

I would be happy to discuss this with you and will call you to provide any further details you may want.

Sincerel

Gerard M. Hamblin, PE Area Engineer



Attachment B-3

EPA Region 7 June 25, 2018 authorization for disposal of special waste from 1220 Steuben Street, Sioux City under Consent Agreement and Final Order RCRA-07-2018-0248 in Dickinson County Landfill



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 7

11201 Renner Boulevard Lenexa, Kansas 66219

JUN 25 2018

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
Article No.: 7014 1200 0000 6127 2245

Ms. Michelle Gale, Esq. Senior Legal Counsel Waste Management 720 E. Butterfield Road Lombard, Illinois 60148

RE:

1220 Steuben Street, Sioux City, Iowa

RCRA ID IAR000522086

Management of Special Waste by Waste Management

Dear Ms. Gale:

The United States Environmental Protection Agency has reviewed your May 16, 2018, letter regarding management of special waste during Waste Management's planned clean-up at the referenced site. The letter requested approval for disposal of "mixed waste" that included a combination of televisions, wood, plastic, dirt, computers, keyboards, and other debris including small amounts of broken Cathode Ray Tubing (CRT) glass at the Dickinson County Landfill.

The EPA believes there would be an increased risk to human health and the environment posed by sorting these piles to remove small amounts of broken CRT glass and other electronic waste from the larger amounts of non-hazardous waste and debris. Therefore, the EPA agrees that this combination of small amounts of broken CRT glass and other electronic waste mixed with larger amounts of non-hazardous waste and debris can be managed as special waste following all state solid waste laws. Please note that this letter only applies to piles located at the referenced site and that are already mixed. This does not apply to any piles of waste segregated by type, or where the waste is predominately broken CRT glass and/or other electronic waste. The EPA is not authorizing Waste Management to undertake any waste management practice at the Dickinson County Landfill for which Waste Management has not been previously authorized by the EPA or the IDNR.

This letter shall only apply while the Consent Agreement and Final Order (RCRA-07-2018-0248) is effective.

Please direct all questions to Rebecca Wenner, of my staff, at (913) 551-7644 or wenner.rebecca@epa.gov.

Mary Goel

Mary Goeta

Chief

Waste Enforcement and Materials Management Branch Air and Waste Management Division

cc: Amie Davidson, Supervisor, Contaminated Sites Section (via e-copy) Iowa Department of Natural Resources

Susan Johnson, Quality Bureau-Solid Waste, IDNR (via e-copy)

Mr. Jeff Edwards, Nebraska Department of Environmental Quality (via e-copy)

Parthenia Evans, Stinson Leonard Street LLP (via e-copy)



Attachment B-4
Executed IDNR Special Waste
Authorization/Approval Form



IOWA DEPARTMENT OF NATURAL RESOURCES

REQUEST FOR SPECIAL WASTE AUTHORIZATION



Check	one	of	the	foll	lowing	•

$\overline{}$	New			
IXI	NOW	Ann	lico:	LIOR
	IACAA		IICa	LIVI

Renewal, Existing SWA #:

The intent of a special waste authorization is to provide safe and proper management for disposal of wastes which present a threat to human health or the environment or a waste with inherent properties which make the disposal of the waste in a sanitary landfill difficult to manage. It is each landfill's responsibility to inform the waste generator if a waste should be handled as a special waste and to ensure that special wastes delivered to the landfill conform to the Special Waste Acceptance Criteria (SWAC) on file with the Department. It is the Department's responsibility to review each application for a special waste authorization to verify that the proposed waste can be landfilled under the current regulations in lowa.

READ THE FOLLOWING INSTRUCTIONS BEFORE COMPLETING THIS APPLICATION

Waste Generator:

- 1. Complete Sections 1-3 of this application applicable to the waste characterization and disposal information.
- 2. Attach Toxicity Characteristic Leaching Procedure (TCLP) test results, material safety data sheet(s) (MSDS), or evidence of "processor knowledge" when appropriate that demonstrates the waste is not considered a characteristic hazardous waste exhibiting the properties of flammability, corrosivity, reactivity or toxicity or a listed hazardous waste as defined in 40 CFR Part 261, Subpart D.
- 3. Provide signature in Section 3 to verify that the information provided is true, accurate and complete.
- 4. <u>Mail or deliver (2) copies</u> of the completed application with attachments to the requested disposal destination (*must be a landfill that is authorized to accept waste from the service area of where the waste was generated*). Please contact Sue Johnson at (515) 725-8317 for a list of landfills authorized to accept waste from the service area in which your facility is located.

Receiving Landfill:

Prior review of this application by the receiving landfill allows the department to more quickly process and evaluate the application.

- 1. Complete Section 5 of this application applicable to the landfill.
- 2. Indicate by signing the application that the landfill is willing to accept the waste if a Special Waste Authorization is issued by the department and if instructions for disposal of the waste, as contained in the landfill's SWAC, are followed by the generator.
- 3. Attach SWAC procedures for disposal of the waste.
- 4. Keep 1 copy for your records and <u>submit the remaining one copy</u> of the completed application with attachments (TCLP, MSDS, SWAC, etc.) to the department at the following address:

Iowa Department of Natural Resources Land Quality Bureau- Attn: Susan Johnson 502 East 9th Street Des Moines, IA 50319-0034

Applications will be considered incomplete if not signed by both the waste generator and receiving landfill. The receiving landfill must attach a copy of the SWAC for the particular waste for which the application has been submitted.

Written notification of approval or rejection will be mailed or faxed to the generator and landfill. If approved, a copy of the authorization must accompany the waste hauler to the landfill.

For questions concerning this application contact Sue Johnson at (515) 725-8317 or susan.johnson@dnr.iowa.gov

SECTION 1: WASTE GENERATOR INFORMATION

SECTION 1. WASTE GENERATOR IN ORMATION				
Name of Primary Contact* Don Smith *SWA approvals will be sent to this person at the address provided by	nolow.	Title _E	ngineering Mana	ger
Company Name Waste Management of lowa, Inc.	perow.			
•		-		v v
Mailing Address W132 N10487 Grant Drive	C4-4-	NA/I	7:n Codo	E2022
City Germantown	State		Zip Code	53022
Telephone # 262 806 6039		Fax #		
Address or location of the point of generation of the wa	ste, if d	ifferent from the	company addres	s:
Address 1220 Steuben Street	04-4-		7:- C- d-	54405
City Sioux City	State	IA	Zip Code	51105
SECTION 2: WASTE CHARACTERIZATION				
Waste determined to be hazardous may not be landfi waste is not considered hazardous. For raw or virgir waste is not hazardous may be submitted in lieu of a To The generator may also apply knowledge of the hazardor the processes used ("knowledge of process"). In	n materi CLP ana dous ch	als being dispo	sed of, a MSDS to the waste in ligh	that indicates the
knowledge that is applied must be valid and verifiable for their claim by providing supporting information to ju	and the	e generator mus		
Waste includes televisions, televisions in consoles, mowith dirt, wood, cardboard, plastic and other debris inc (CRT) glass. Has any pretreatment been utilized? If so, please described to the consoler of t	luding s	mall amounts of	broken Cathode	
List the alternatives to disposal that were analyzed and A Consent Agreement and Final Order has been issued City site.	reason by the	not utilized (<i>atta</i> EPA Region 7 to	nch extra sheets i complete a clean	f necessary): up at the Sioux
Physical state at room temperature?	П	Percent (%) Solic	l: pH:	Flashpoint:
		100		>245
Solid Semi-Solid Liquid Does this waste pass the paint filter liquids test?		100		>215
Free liquids are prohibited from landfill disposal. Free I when a 100-millimeter or 100-gram representative samp (fine mesh size) conical paint filter for five minutes.				
Is this waste a listed hazardous waste as identified in 4 following web link to find listed hazardous wastes:				

SECTION 3: WASTE DISPOSAL INFORMATION

Indicate the proposed disposal location and if this is a request for an on going disposal of a special waste or a one-time disposal. If on going, indicate the approximate amount in pounds to be disposed of quarterly.
Landfill Name* Dickinson Landfill, Inc.
*List only a landfill that is authorized to accept waste from the service area of where the waste was generated. Sue Johnson at (515) 725-8317 or susan.johnson@dnr.iowa.gov for a list of landfills authorized to accept waste from your facility.
On going (or intermittent) with an average disposal rate per quarter of pounds
Indicate the amount on hand to be disposed of immediately: pounds
☑ One time only, with an estimated quantity of
SECTION 4: WASTE GENERATOR CERTIFICATION
"I certify under penalty of law (§455B.417.1(c), Code of lowa) that I have examined and am familiar with the information submitted in this document concerning hazardous waste, and all attachments, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete." Applicant Signature: Date:
Printed Name: Donald A Smith Title: Engineering Manager
SECTION 5: LANDFILL INFORMATION
The following section is to be completed by the receiving landfill. By signing below, the landfill verifies that the application has been examined and if approved by the department, is willing to accept the waste described within, provided that instructions for disposal of the waste, as contained in the landfill's Special Waste Acceptance Criteria, are followed by the generator. Prior review of this application by the receiving landfill will allow the department to more quickly process and evaluate the application. Please address the following:
Indicate the properties that lead you to believe this is a special waste: See the characterization of the waste as described in Section 2
Indicate any special handling procedures that the waste generator must follow prior to delivery at the landfill: Loads must be delivered tarped
Name of Responsible Official*: Blair Nelson *SWA approvals will be sent to this person at the address given below.
Solid Waste Agency Name Dickinson Landfill, Inc.
Mailing Address 2575 190th St
City Spirit Lake State IA Zip Code 51360
Telephone # _(866) 909-4458 Fax #
Responsible Official Signature: 18/18/12 Date: 5-29-18



Appendix C Site-Specific Health and Safety Plan



Site-Specific Health and Safety Plan

Project Name: Waste Management of Iowa, Inc.

- Steuben Street Waste Removal

Project Number: 10110808

Project Location: 1220 Steuben Street, Sioux

City, Iowa

Date: August 31, 2018

Revision 0



Page:



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PART 1 – SITE-SPECIFIC SH&E PLAN

1.0 INTRODUCTION

The site is owned by Waste Management of Iowa, Inc. (WMI). The site was leased to Siouxland PC and Electronics Recycling, LLC, Mr. Aaron Rochester, President, who operated the Site as Recycletronics facility. The lessee abandoned special and hazardous waste on the Site that requires removal. WMI terminated the lease. HDR has been hired by WMI to provide oversight of waste removal and associated operations.

Waste on the site will be identified, handled, transported, and disposed of as either Hazardous Waste or Special Waste as described in the Site Work Plan.

1.1 Plan Development and Approval

The purpose of this Site-Specific SH&E Plan (Plan) is to define measures to be implemented to address worker safety, health, and the protection of the environment for field work associated with WMI, Steuben Street Waste Removal, 1220 Steuben Street, Sioux City, lowa.

A copy of this Plan will be posted at the jobsite and/or maintained in project vehicles.

Prepared By:	Todd Wilson	Date:	3/19/2018
Approved By:	Edmurdo fremenday	Date:	4/26/18
Project Manager Acknowledgment:	Todd C. Wilson	Date:	8/29/18

1.2 Modification Log

This Plan will be revised as applicable to address any changes in site conditions, assignments, and/or anticipated hazards, or when new information surfaces from a procedural failure or incident investigation. Revisions to this Plan will be distributed to affected parties through site safety meetings.

Change Number	Description of Change	Approval



1.3 SH&E Meetings and Briefings

1.3.1 Orientation

The contents of this Plan will be transmitted to field team members (including subcontractors and client representatives as applicable) via verbal discussion at a documented project kick-off/orientation meeting prior to the start of cleanup operations. New hires and transfers who join the team after this meeting must be provided this same orientation before arriving onsite. Documentation of all orientation meetings shall be included in the project file (see attached Project Safety Orientation Form).

1.3.2 Daily Safety Meetings/Briefings

The SH&E Representative (i.e. onsite HDR field team member) shall document daily safety briefings at the project site at the beginning of each shift. Documentation of daily briefings (see attached Job-Site SH&E Meeting Form) shall include the names of employees present and the topics discussed which could include the following:

- · Assigned duties and tasks for the day
- Anticipated site conditions (access, weather, etc.)
- Anticipated site hazards and control measures
- Environmental compliance (control of stormwater, hazardous materials management, spill response, etc.)
- Lessons learned from reported near miss and injury/illness incidents from this project or from any other projects that may be beneficial or applicable to this project
- Revisions/updates to the Site-Specific SH&E Plan and/or safe work procedures

In the event that field team members are unable to attend the briefing, the SH&E Representative shall conduct a separate briefing with these personnel before they will be allowed to begin work.



PROJECT SAFETY, HEALTH, AND ENVIRONMENTAL ORIENTATION FORM

Project		Waste Management of Iowa, Inc., Steuben Street Waste Removal
Date:		
Locatio	on:	1220 Steuben Street, Sioux City, Iowa
Attende	ees:	
Topics	•	
	Review assigned d	luties and tasks
	Discuss anticipated	d site conditions (access, weather, etc.)
	Review the Site-Sp	pecific SH&E Plan and Job Hazard Analysis (JHA) forms
	Confirm training, en	quipment/supplies, medical clearance, and vaccinations have been acquired for all
		y procedures and reporting and investigation procedures for near miss, injury/illness, conmental incidents
		entally safe work practices (spill/release management, hazardous waste, solid cological/cultural resources, etc.)
Notes/	Comments	
I have I	Member Signatures been briefed on and As for this project.	s: understand and agree to follow the requirements of the Site-Specific SH&E Plan



JOB-SITE SAFETY, HEALTH, AND ENVIRONMENTAL MEETING FORM

Project		Waste Management of Iowa, Inc., Steuben Street Waste Removal
Task:		
Date:		Time:
Locatio	on/Work Area:	·
Attende	ees:	
Topics	(check off list as c	ompleted):
	Review assigned d	uties and tasks for the day
	Discuss anticipated	site conditions (access, weather, etc.)
	Review the Project	Specific SH&E Plan and Job Hazard Analysis (JHA) forms for the day's work
	Confirm team roles mentors)	(on-site SH&E Representative, first aid/CPR responders, Short Service Employee
	Discuss emergenc	procedures and equipment (satellite phone, whistles, horns, etc.)
	Identify necessary (if staff is willing to	medications and individual team member's medical situations/precautions share with team)
	Review lessons le	arned from any reported incidents and the status of any corrective actions
	Confirm everyone	s comfortable with daily plan of action
Summ	ary of Work Cond	ucted and Planned:
Attend	ACTION OF SEA PROCESSOR SECTION SECTION SECTION SE	Name (min)
N	ame (print)	Signature Name (print) Signature
	2	
Meetin	ng Conducted by:	
	Name (p	rinted) Signature



2.0 SCOPE OF WORK AND PROJECT SCHEDULE

WMI and EPA, Region 7 have entered into Consent Agreement and Final Order, Docket No. RCRA-07-2018-0248, July 17, 2018 requiring WMI to remove wastes from the Site. The Site is located at 1220 Steuben Street in Sioux City, lowa (referred to as the "Steuben Street Facility"). The wastes are crushed cathode ray tube glass and mixed electronic waste "special waste" consisting of televisions, wood, plastic, dirt, computers, keyboards and other small electronics and other debris including small amounts of broken cathode ray tubing.

2.1 Project Location and Site History

The site is owned by Waste Management of Iowa, Inc. (WMI On July 19, 2016, the Site was leased to Mr. Aaron Rochester, president of Siouxland PC and Electronics Recycling, LLC, who operated the Site as Recycletronics. The lessee abandoned special and hazardous waste that requires removal on the Site. WMI terminated the lease. HDR has been hired by WMI to provide oversight of cleanup operations due to the hazardous nature of the materials present (i.e. leaded glass)waste removal and associated operations.

2.2 Site Logistics

2.2.1 Site Access and Security

The fence will be locked to prevent unauthorized access to outside personnel. Keys will be provided to HDR and WMI contractors to perform waste removal services at the property.

2.2.2 Drinking Water and Sanitary Provisions

WMI owns the property adjacent to the Steuben Street Site and will have drinking water and sanitary provisions. Otherwise, water will be provided on-site for HDR and contractor use.

2.2.3 On-Site Documentation and Postings

A copy of this Plan, including emergency contacts, WorkCare contact information, route maps to emergency and non-emergency medical facilities, Job Hazard Analysis (JHA) forms, and chemical safety data sheets (SDSs) will be kept in a safety binder in project vehicles and/or a location that is readily available at the site.

2.2.4 Drugs and Alcohol

The manufacture, distribution, possession, use, or being under the influence of drugs is prohibited while performing work for HDR. This includes the use or possession of prescription medications without a valid prescription.

Employees whom HDR management/supervision reasonably believes directly or indirectly caused a work-related injury or property damage will be required to undergo drug and alcohol impairment testing. Such testing will be conducted as soon as practicable, but not later than 32 hours after the incident for drugs and not later than six hours for alcohol.

2.3 Subcontractor SH&E Requirements

For any field work performed by HDR subcontractors, each subcontractor must develop their own Site-Specific SH&E Plan related to their specific on-site activities. The subcontractor's Site-Specific SH&E Plans must be at least as comprehensive as this Plan as it relates to the subcontractor's services and shall comply with all applicable laws and requirements of the Prime Agreement. Unless otherwise agreed upon in writing, each subcontractor is responsible for providing all safety equipment and safety training for their employees.

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HDR is not responsible for approval of the subcontractor's plans or the means and methods set forth by the subcontractor; our obligation is to verify the subcontractor's plan exists and is applicable and relevant to the work to be performed.

3.0 FIELD WORK IMPLEMENTATION

3.1 Key Personnel

The following personnel have principal responsibility for the implementation and maintenance of health and safety measures during field work.

- Todd Wilson Field Activity Supervisor
- Austin Broshar On-site SH&E Representative or Field Team Member
- Jason Gilbert On-site SH&E Representative or Field Team Member
- Joe Shields Quality Assurance/Quality Control
- Michael Classen Project Manager
- Others TBD

3.2 Responsibilities and Lines of Authority

Personnel in the field will contact Michael Classen (402) 926-7003 or Todd Wilson (402) 399-1283 or (402) 651-3422.

3.2.1 Project Manager and On-Site SH&E Representative

The Project Manager serves as the primary point of contact and is responsible for SH&E implementation and enforcement of safe work practices. When the Project Manager is not on-site, he/she will delegate an on-site SH&E Representative to take on the following responsibilities. If the SH&E Representative needs to leave the site or is not available, the Project Manager will assign an alternate HDR team member to fill the role (any field team member competent in the responsibilities below can serve as the SH&E Representative).

On-site SH&E representative duties will include:

- Oversee SH&E implementation in the field and enforce safe work practices.
- Assign mentors for short service employees (SSE).¹
- Participate and document daily safety briefings.
- Monitor on-site hazards and conditions and document safety inspections.
- Enforce safe work practices.
- · Ensure availability and use of PPE.

An SSE is an employee with less than 6 months experience in his/her present job or with his/her present employer. A single-person assignment cannot be given to an SSE (that is, an SSE may not work alone) and field teams of less than five shall have no more than one SSE. Assigned mentors must be on site with their SSE and are responsible for monitoring them for health and safety awareness at the job site and SH&E compliance. As applicable based on client requirements, SSEs must wear uniquely colored hard hats or another type of visual identifier. Prior to job mobilization, the PM is to notify the client through the client project coordinator, contractor contact, and/or on-site supervisor of all jobs containing SSEs and the method that will be used to identify SSEs. HDR subcontractors must manage their SSEs in accordance with these same requirements.

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- Maintain SH&E equipment/instrument operation manuals and records of use and calibration.
- · Monitor field team for heat and cold stress.
- Confirm employees' suitability for work based on physician recommendations for assignments requiring medical clearance (for example, hazardous waste work, rope access, exposure to noise, asbestos).
- Ensure reporting of all incidents in accordance with HDR reporting procedures, including
 contact to WorkCare for non-emergency injuries/illnesses and submittal of incident reports in
 the IndustrySafe reporting system (https://industrysafe.com/hdrinc).
- Provide oversight for site access for visitors and conducting visitor orientations.
- Serve as the facilitator of communications in emergencies.
- Immediately contact the Director of SH&E regarding any regulatory visits, audits, or inspections (for example, OSHA inspections).

3.2.2 Field Team Members

Field team members must be continually conscious of safety hazards and are expected to:

- Plan, organize, and perform each facet of work in the safest manner possible.
- Be constantly alert and report any unsafe act or condition, injury, incident, and safety
 infraction to a supervisor, the Project Manager, or the SH&E Representative so treatment can
 be obtained and/or corrective action taken them immediately.
- Actively participate in all safety training programs relevant to the work which they are performing
- Attend and actively participate in HDR trainings, meetings, and briefings.
- · Use and maintain assigned equipment in a safe and responsible manner.
- Follow the procedures and processes specified in this Plan.

HDR SH&E on-site personnel will coordinate with the Contractor to maintain a safe work environment.

3.3 Stop Work Authority

Personal safety takes priority over all project deadlines, demands, and any other considerations. At all times and on all sites, it is HDR's policy, practice, and responsibility to provide a place of employment where HDR employees can conduct project-related activities in a safe and healthy environment. HDR strives to ensure the health and safety of its employees by identifying and mitigating recognized hazards to avoid or eliminate potential for injury or illness.

HDR employees need to be conscious for the safety of other project personnel and are expected to promote safe work habits. HDR employees are encouraged and empowered by HDR to maintain a safe workplace and only work when the hazards have been removed, controlled, or mitigated. No HDR employee is expected or obligated to perform work they consider unsafe or damaging to the environment.

Employees are to immediately report SH&E concerns to their local Safety Coordinator, supervisor, and/or Project Manager. In addition, **Stop Work Authority (SWA) allows any HDR employee to stop work conducted by HDR or WMI subcontractors where there is a serious hazard or imminent danger**. Once invoked, the activity in question will be stopped and reviewed by those performing the work and their immediate supervisors. Work will not resume until all stop work issues and concerns have been adequately addressed. There will be no retribution for invoking SWA.



3.4 Unsafe Condition Reporting

Although HDR is not responsible for the health and safety or means and methods of other employer's work, when HDR employees (or WMI subcontractors) could be exposed to unsafe conditions/practices created by another contractor, or when observed unsafe conditions/practices pose a risk of serious injury or death to those exposed (regardless of company affiliation), the observing employee is obligated to notify someone who can take appropriate corrective action.

3.4.1 Exposure to HDR/HDR Subcontractors

If an HDR employee identifies an unsafe condition/practice by another contractor that impacts the ability of HDR or HDR subcontractors to conduct project activities in a safe manner, the employee is to:

- Move away from the unsafe condition/practice to prevent exposure.
- Notify HDR supervision for reporting to the creating/controlling contractor's senior management.
- Document the notification in the project field logbook, daily report, or other records based on contract requirements.
- Take reasonable alternative protective measures to prevent exposure to HDR employees and HDR subcontractors until the unsafe condition/practice is corrected or a reasonable explanation is provided as to why no real hazard exists.

3.4.2 Exposure to Others (Non-HDR Employees/Non-HDR Subcontractors)

If an HDR employee observes an unsafe condition/practice by another contractor (not contracted with HDR) to which HDR/HDR subcontractors are not exposed but, in the employee's judgment, poses a serious hazard or imminent danger to others that could be exposed, the employee is to:

- Immediately warn those in imminent danger, regardless of company affiliation.
- Immediately notify HDR supervision for reporting to the creating/controlling contractor's senior management.
- When describing the serious hazard or imminent danger observation, do not provide any
 means or methods or specific remedies for correction. Our obligation is strictly limited to
 informing site supervision of the observation.
- Make it clear that our notification is advisory only and should not be construed as a direction or a stop-work order - the non-HDR contractor is solely responsible for determining and implementing the necessary corrective action.
- Document the notification in the project field logbook, daily report, or other records based on contract requirements.

3.5 Regulatory Inspection Protocols

It is our expectation that all employees will follow the requirements set forth in this Plan as well as all regulations that apply to their work location. HDR is committed to cooperating with regulatory and/or compliance inspection personnel as applicable on our project sites. HDR does not authorize any HDR employee to prohibit a properly identified representative from prompt admittance to any work area. Therefore, we will not require warrants for occupational SH&E officials' entry into any project location where HDR is engaged. We will cooperate with all inspectors in accordance with local regulatory requirements.

Guidelines for HDR actions during the inspection are summarized as follows.



Activity	HDR Action
Arrival of Inspector(s)	HDR project personnel are to contact their Regional SH&E Manager if an occupational SH&E inspector appears onsite to conduct an investigation involving HDR personnel.
Meeting with Site Representative	All HDR project sites require designation of an on-site SH&E Representative. The SH&E Representative is responsible for interaction with the inspector(s) and must be summoned immediately upon arrival of an inspector(s) at the site.
Credential Verification	Immediately upon arrival of the inspector(s), the SH&E Representative is to request and document the inspector's identification. If the Inspector is missing his/her Identification card, or the identity of the inspector(s) is in question, a call to his/her home office is an acceptable practice to verify authenticity of credentials and inspection authorization.
Inspection	 The SH&E Representative is to accompany the Inspector(s) at all times during the visit. HDR should attempt to replicate all photos, samples, or notes collected by the inspector(s), paying special attention to where the Inspector(s) goes, who is talked to, what sampling is done, which instruments are used, and any specific comments that are made. Site personnel are to conduct themselves in a professional manner when interacting with regulatory officials. The following guidelines should be adhered to during the inspection. Keep all responses short and to the point without elaboration. Personnel should not volunteer information not specifically asked for by the inspector and should avoid statements that might be construed as an admission of noncompliance. Do not demonstrate any operations for the Inspector(s) that are not part of the daily normal planned activities. If possible, immediately remedy any alleged violation(s) identified by the Inspector(s). If an employee violates a work rule during an inspection, the same remedial/disciplinary action will be taken as if the Inspector(s) was not present. Failure to correct a violation noticed during the inspection may itself result in a citation. Regulations may require the maintenance of certain safety and health records. If the Inspector(s) requests to review records, grant access to the documents.

3.6 Disciplinary Action

Should an employee commit a SH&E violation (any act contrary to the SH&E requirements set forth in this manual or those established by a client or governmental regulations), intentional or not, disciplinary action may result. Depending on the severity of the violation, the employee will typically be retrained to reinstruct the employee on the proper conduct expected. This retraining, and the circumstances necessitating it, will be documented and retained in the employee's personnel file.

For serious first time violations and repeat violations in which an offending employee continues to exhibit a disregard for the same or similar SH&E procedures after retraining, the responsible manager shall consult with the Director of SH&E and the Director of Employee Relations. As appropriate to the situation, actions could include any one, or a combination, of the following forms of disciplinary action: verbal warning; written warning; probation; suspension; and/or discharge. This is not an all-inclusive list and, because HDR is an at-will employer, it reserves the right to terminate at will without prior disciplinary action.



4.0 JOB SITE INSPECTIONS, AUDITS, AND OBSERVATIONS

4.1 Self-Audit/Take 5

A self audit/Take 5 is a proactive safety process used by employees to confirm they are prepared and confident in their ability to do an assigned task before they begin (they have the necessary training, knowledge, equipment, resources, etc.). The process involves employees "taking 5" (spending approximately 5 minutes) to review the task hazards, associated risks, and control measures prior to exposure. Self-audits will be documented in the field logbook.

4.2 Job Site Inspections

The SH&E Representative is responsible for conducting and documenting regular job site inspections to confirm compliance with the Site-Specific SH&E Plan and proper identification of site hazards and conditions.

4.3 Corporate SH&E Field Audits

Corporate SH&E is responsible for conducting field audits. Sites selected for audit are based on a project's scope and duration, anticipated hazards/exposures, potential for environmental impact, and the frequency and complexity of the work being performed. PMs can contact a Regional SH&E Manager to request a formal audit by a qualified safety professional at any time.

4.4 Behavior Based Safety Observations

For projects performed by offices participating in HDR's BBS program, all personnel on the project are to care for the safety of their fellow coworkers by being cognizant of their observed behaviors and documenting them in IndustrySafe (https://industrysafe.com/hdrinc). See the SH&E portal for more information on BBS implementation and expectations.

5.0 INCIDENT REPORTING AND INVESTIGATION

In the event of an incident, the most important immediate action is to provide medical assistance to those that may need it and to ensure the safety of others that may be affected.

5.1 Incident Reporting

All work-related near miss, injury, illness, damage, environmental, and security incidents involving HDR employees, subcontractors, and/or other parties at HDR work sites must be reported and investigated as soon as possible following occurrence.

Employees involved in or witness to an incident:

- 1. All Incidents
 - a. Notify Supervisor to arrange for post-incident drug and alcohol testing (if applicable)
 - b. Notify Project Manager for client reporting
 - c. Submit Incident Report in IndustrySafe
- 2. Non-Emergency Injury/Illness Incidents
 - a. Contact WorkCare (888-449-7787) for medical consultation
- Serious Incidents (incidents involving death, hospitalization, amputation, loss of an eye, significant damage, and/or environmental impact)



- a. Notify Director of SH&E or Regional SH&E Manage for regulatory reporting
- b. Notify WMI PM Gerard Hamblin (262) 349-3409

5.2 Incident Investigation

All incidents will be investigated by the Regional SH&E Manager with assistance from the on-site SH&E representative, project manager, and/or local safety coordinator and documented in IndustySafe.

6.0 EMERGENCY ACTION PLAN

This Emergency Action Plan has been prepared to define the responsibilities, resources and actions necessary to respond to incidents and emergency situations.

6.1 Communication Methods

X Cellular Phone	2-Way Radio	□ СВ
☐ Satellite Phone	X Verbal	X Hand Signals
Smoke / Flares	Air Horn	Siren
Other:	Other:	Cother:

6.2 Contact Numbers

Contact	Name/Address	Phone Number
Emergency Contacts		
Medical, Fire, and Police Emergency		911 ^[a]
Medical Facility for Emergency Care	Mercy Medical Center 801 5 th Street, Sioux City, IA	(712) 279-2010
Railroad Emergency Notification ^[b]	Trans-Load Site 1801 Hwy 75 N Sioux City, IA 51105	BNSF - 800-832- 5452 UP - 888-877- 7267
Non-Emergency Contacts		
Roadside Assistance	lowa	*55
WorkCare ^[c] (non-emergency injury/illness consultation)		888-449-7787
Medical Facility for Non-Emergency Care ^[d]	Mercy Urgent Care 3520 Singing Hills Blvd, Sioux City, IA	(712) 222-7990
HDR Project Management and SH&E Contacts		
Project Manager	Todd Wilson	(402) 651-3422
Project Controller	Mike Classen	(402) 926-7003

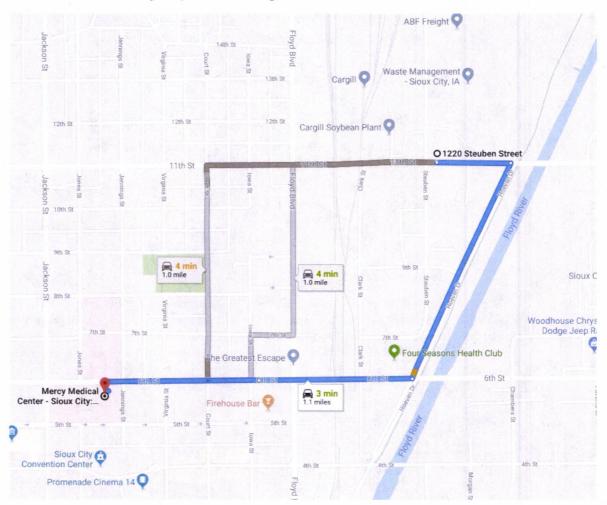


Local Safety Coordinator	Dana Becker	(402) 926-7028
SH&E Regional Manager	Ed Armendariz	(816) 853-4278
Director of SH&E	Jeff Kleinfelter	760-450-6497
First Aid/CPR Trained Responders ^[e]	Expiration	Phone Number
Todd Wilson	March 2020	(402) 651-3422
Austin Broshar	March 2020	(402) 208-0662
Jason Gilbert	March 2020	(402) 672-0920
TBD		

- [a] The emergency number "911" is not applicable in all areas. Confirm based on the project location and replace as appropriate with the correct emergency contact numbers.
- [b] If the project site includes public highway-rail grade crossings, identify the railroad emergency notification number posted on or near the crossing sign or single equipment. Use this phone number to report problems at the crossing (malfunctions, stalled vehicles on tracks, etc.) so the dispatcher can intercept trains or equipment approaching the crossing. If there is an immediate threat to life, call 911.
- [c] Contact the WorkCare Incident Intervention hotline for non-emergency injuries/illnesses. WorkCare is available 24/7 for evaluation of self-care treatment options or referral to a designated occupational health facility.
- [d] Select a facility from HDR's list of Designated Occupational Health Facilities when practical. If there is not a facility in near proximity, contact Amber Lyles in Corporate SH&E to find an acceptable alternative.
- [e] If the job site is more than 15 minutes (3 minutes for sites where serious accidents such as those involving falls, suffocation, electrocution, or amputation are possible) from a medical facility, there must be at least one person at the job site with current certification in first aid/CPR. At remote sites (a site that is isolated from normal human activities or not easily accessible by emergency services), at least two first-aid providers must be present at the job site.



6.3 Medical Facility Maps and Driving Directions



6.4 Emergency Equipment

- · Fire extinguishers
 - Each contractor work vehicle will have a portable fire extinguisher. A project extinguisher will be provided.
 - Only those trained in the use and limitations of portable fire extinguishers are allowed to use them.
 - All portable fire extinguishers will be visually inspected by the PM (or designee) monthly to confirm they are fully charged and operable.
- First Aid Kits
 - o Each project vehicle will have a first aid kit.
 - First aid kits will be checked by the PM (or designee) before being sent out on the project and at least weekly thereafter during field operations to ensure they are full, in good condition, and that contents that have expiration dates have not expired.
- Emergency Shower/Eyewash



- Weather Radio
 - A weather radio will be included in the project tub.
- Spill Control and Containment
 - No spill control equipment is required.

6.5 Evacuation Routes/Procedures

In the event the project needs to be evacuated, employees shall gather in the following location(s):

- Severe weather rally point: The severe weather rally point will be within the offices of the 1220
 Steuben building.
- Evacuation rally point: The evacuation rally point will be the adjacent Waste Management facility at 1230 Steuben Street.
- Tornado Shelter: The severe weather rally point will be within the basement of the 1220 Steuben building.

6.6 Inclement Weather

Inclement weather may occur while on the project site or during travel to and from the project. The onsite SH&E Representative will monitor the weather and weather forecasts using cell phone or radio for conditions that may require the field team to stop work or evacuate the site (high winds, heavy rain, lightning, fog, snow/ice, etc.). Daily meetings/briefings led by the SH&E Representative will include discussion of any anticipated inclement weather conditions that may impact the field team and the proper actions to take if facing these conditions. As appropriate, these discussions will include stop work and communication procedures, evacuation routes and shelter locations in the case of remote project work, etc.

7.0 FIELD HAZARD ANALYSIS AND RISK ASSESSMENT

7.1 Job Hazard Analysis Forms

All field team members and subcontractors are responsible for being actively involved in the HDR hazard analysis and risk assessment process, which involves the identification, assessment, and prioritization of risks and measures to eliminate, minimize, monitor, and/or control them. Consideration is given to the safety, health, and security of workers, the public, and the environment.

Job hazard analysis (JHA) forms are used to document the process and identify the sequence of work, specific hazards anticipated, and control measures to be implemented to eliminate or minimize each hazard. The JHA form also lists the necessary equipment and training required to perform the task safely.

Initial JHAs for tasks associated with this field work effort are included in Part 2. Prior to initiating a task, the field team must confirm the JHA is complete and adequately identifies and controls associated hazard. If there is a change in the scope of the work, if work conditions change, if new hazards are identified, or the controls prove inadequate or ineffective, the field team must revise the JHA as necessary, review with the team, and have each team member sign it before any work is conducted. Revisions can be handwritten on the form.

7.2 JHA Record Retention

All HDR field team members involved in the task must sign the JHA form in the field to acknowledge completion of the review and concurrence with the job steps, hazards, and controls described in the



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JHA. The SH&E Representative shall keep completed JHAs in a binder at the job site until the work is complete. After the work is complete, the electronic version of the initial JHA will be updated to include improvements that were identified in the field to assure better planning and a safer work experience the next time the task is performed. A copy will be forwarded to Corporate SH&E for inclusion in the JHA library.

8.0 HAZARD CONTROL

Methods to control hazards include hazard analysis of specific work tasks, safe work procedures, training, personal protective equipment (PPE), medical surveillance, and exposure monitoring.

8.1 Safe Work Procedures

Safe work procedures for the hazards/exposures associated with this project are included in Part 3.

8.2 Checklists/Permits for High Hazard Activities

For high hazard activities, field teams must complete the hazard-specific checklists/permits included in the Safe Work Procedures in Part 3 to confirm regulatory compliance requirements are met and adequate controls and protection are in place prior to exposure. These checklists/permits must be completed when initially exposed and when exposures and/or conditions change to a degree that warrants reconfirmation of hazard control. Completion of individual checklists is not required when multiple team members are exposed to the same hazard. The field team can work together to complete one checklist/permit for each hazard for all exposed.

Completed checklists/permits must be maintained in the project files for documentation. Note that copies of permit-required confined space entry permits must also be submitted to Corporate SH&E following the entry to meet regulatory recordkeeping requirements. PMs are to send completed permits and any other entry documentation to their Regional SH&E Manager.

8.3 SH&E Training

Mandatory training is listed below:

Table 1. SH&E Training Assignments and Completion Dates

	Field Team Member Date of Training					
Training	T. Wilson	A. Broshar	J. Gilbert			
OSHA 10-HR Construction Safety (5-year expiration)	1/26/2018	1/26/2018	1/26/2018			
40 Hour OSHA HAZWOPER/8-HR Refresher	4/6/2018	4/6/2018	4/6/2018			
Confined Space Awareness	1/26/2018	1/26/2018	1/26/2018			
FA/CPR Certification (2-year expiration)	3/2018	3/2018	2/22/2018			

8.4 SH&E Equipment and Supplies

8.4.1 Personal Protective Equipment (PPE)

PPE for each task and any specific procedures to be followed to assure proper use and maintenance.

 A Class E hard hat meeting ANSI Z89.1-1997 (or later) design requirements shall be worn at all times when in a construction environment and where overhead hazards exist.



- A Class II reflective safety vest (or Class II rain jacket) meeting ANSI-ISEA 107-2004 (or later)
 design requirements shall be worn at all times when in a construction environment and when
 in the vicinity of moving traffic and/or mobile equipment.
- Safety glasses with rigid side shields meeting ANSI Z87.1-1989 (or later) design requirements shall be worn at all times when in a construction environment and in any area where eye hazards exist.
- Mid-ankle or higher lace-up safety-toed boots meeting ASTM F2413-2005 (or later) design
 requirements shall be worn by all workers in a construction environment or on railroad
 property and in areas where there is a danger of foot injuries due to falling, rolling, or piercing
 objects or when an employee's feet are exposed to electrical hazards.
- Hearing protection shall be worn when exposures exceed 85 dBA and employees shall be
 enrolled in HDR's Hearing Conservation Program as applicable. See the <u>SH&E portal</u> for
 information regarding enrollment.
- Face shields, in addition to safety glasses, shall be worn when grinding, chipping, jack
 hammering, and power sawing or when conducting other tasks that involve flying particulate
 and debris hazards or chemical splash hazards.
- Gloves appropriate to the task shall be worn. See the <u>SH&E portal</u> for glove selection guidance.
- Long pants and shirts with sleeves (no tank tops) shall be worn for all field work.

8.4.2 Other Equipment and Supplies

Biological Hazards Protection

		Insect Repellent
		Poisonous Plant Barrier Cream
		Poisonous Plant Wash
		Mosquito Head Net
Em	erger	ncy Response Equipment and Supplies
		Portable Fire Extinguisher
		First Aid Kit
		Lighting (flashlight, extra batteries)
		Food/Water
		Survival Gear
		Tool kit
		Warning/Caution Tape
		Weather Radio
Hea	t Str	ess/Sun Safety
		Thermometer (heat strain monitoring)
		Sunscreen (UVA/UVB)

8.5 Medical Clearance/Vaccination

No specific medical clearance or vaccinations are required.

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8.6 Exposure Monitoring

No specific exposure monitoring requirements.



PART 2 – JOB HAZARD ANALYSIS (JHA) FORMS



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JOB HAZARD ANALYSIS FORM FIELD ACTIVITIES

	Overall Risk Assessment Code (RAC) (Use highest code)					M	
Project Name: WMI – Steuben Street		Risk Assessment Code (RAC) Matrix					
Project Location: 1230 Steuben Street, Sioux City, IA		xtremely High Risk			Probability (P)		5. P. 1
Project Number: 10110808		ligh Risk	Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): T. Wilson/Chemist		=Moderate Risk (F) (L) (O)		(S)	(U)		
Notes: (Field Notes, Review Comments, etc.):	(S)	Catastrophic (C)	E	Е	Н	Н	М
	ity	Critical (Cr)	E	Н	Н	М	L
	N N	Marginal (M)	H	М	М	L	L.
	စ္မ	Negligible (N)	M	L	L	L	L
	RAC is developed after correctly identifying all hazards and fully implementing all controls. Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC P "Probability" is the likelihood to cause an incident, near miss, or accident. S "Severity" is the outcome if an incident, near miss, or accident did occur						
	Step	2: Identify RAC for each "H	lazard" and indica	ate overall hig	phest RAC at the to	p of JHA	

Job Steps	Hazards		Controls	P	S	RAC
1. Field oversight	1.1 Uneven ground, holes, construction debris	1.1.1	Slips, trips and falls. Wear safety boots with ankle protection.	L	М	M
	1.2 Heavy equipment, construction vehicles	1.2.1	Be sure equipment operators acknowledge your presence prior to entering areas where heavy equipment is in operation.	S	Cr	М
	1.3 Overhead and eye hazards	1.3.1	Refrain from entering heavy equipment areas unless directly necessary for task completion.	0	M	М
		1.3.2	Avoid walking in areas where overhead activities are occurring.		2	
·		1.3.3	Stay out of active overhead work areas unless absolutely necessary for task completion.	6		
		1.3.4	When avoidance is not possible, request overhead activity temporarily cease or crews work in other areas to avoid working directly below construction activities.	n 18		
		1.3.5	Wear hard hats and safety glasses			
	1.4 Hand and below the elbow injuries	1.4.1	Identify specific pinch points that may be encountered.	S	M	L

Job Steps	Hazards	Controls			S	RAC
		1.4.2 1.4.3 1.4.4	Wear appropriate gloves. Keep hands from the line of fire while performing tasks. Use appropriate cutting tools for tasks and avoid pocket knives and unguarded utility knives.			
	1.5 Electrical Hazards / High Voltage	1.5.1	Only personnel designated as electrical competent persons will perform work on electrical equipment, rack or stab in / out electrical conductors, work around high voltage equipment.	S	Cr	M
	1.6 Falls from elevation	1.6.1 1.6.2	Work at elevation must be done per HASP. Prior to working at elevation or working on scaffolding, all associated personnel must be properly trained on and understand the equipment limitations of what they are working with.	S	Cr	M
		1.6.3 1.6.4	Pre-task planning is essential for safe work at elevation. Application of controls should follow: Avoidance of work at elevation whenever possible			
			Engineering controls such as railing systems, full decking, and proper hole opening covers. Personal fall arrest systems when working at or above 6' and other engineering controls cannot be put in place.			
,	1.9 Ladder Use	1.9.1 1.9.2	Ladders need to be inspected before each use. Ladders need to be set up properly and used per the manufacturer's instructions.	0	L	M
2. General Field Activities	2.1 Biohazards - Pathogenic diseases, animals and insects	2.1.1	Minimize standing water and food wastes in or near the work areas. Do not blindly place hands / feet into areas which could harbor insects / animals.	S	Cr	М
		2.1.3	Have animal bites immediately checked by urgent care or contact WorkCare immediately. Be aware of signs and symptoms of endemic disease carried by insects/animals.			



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Job Steps	Hazards	Controls	P	S	RAC
3. Hazardous Waste	3.1. Lack of Preparation	3.1.1 All employees engaged in working on Hazardous Waste Sites must have received formal HAZWOPER training in accordance with the requirements contained in 29 CFR 1910.120 / 29 CFR 1926.65, and presented in HDR H&S Procedure #20	S	Cr	L
		3.2.2 Assure that all 11 HAZWOPER requirements are in place before work begins			
	4.1 Sunburn	 4.1.1 Protect skin with loose fitting breathable long sleeve shirt and pants; cover head with hat and cover feet with shoes; wear sunscreen on exposed body parts. 4.1.2 Plan ahead and bring shade tarp if you plan to stay in one spot; always look for safe shade areas when stopping and standing 4.1.3 Follow the Heat Injury and Illness Prevention Plan in the PMC Business Office SH&E Plan. 			L
L4. Site Work in the summer during day time	4.2 Dehydration	 4.2.1 Drink water regularly, even when not thirsty 4.2.2 Read urine chart and compare 4.2.3 Drink isotonic drinks like Gatorade if heavy sweating (not salt tablets or oral rehydration solution i.e. salt) 4.2.4 Follow work/rest period based on relative humidity chart (*color coding should be provided and posted on jobsite by Contractor). 4.2.5 Follow the Heat Injury and Illness Prevention Plan in the PMC Business Office SH&E Plan. 			L
	4.3 Exhaustion	 4.3.1 Realize personal limitations; rest frequently 4.3.2 Use Buddy system to carry out tasks 4.3.3 Do not access areas if you have physical limitations such as climbing ladders; entering excavations; entering confined spaces 4.3.4 Follow the Heat Injury and Illness Prevention Plan in the PMC Business Office SH&E Plan. 			L

Job Steps	Hazards	Controls	P	S	RAC
	4.4 Medical Emergency	 4.4.1 Be prepared with personal medications 4.4.2 Know/carry Emergency numbers 4.4.3 Follow the Project Emergency Action Plan 4.4.4 Follow the Heat Injury and Illness Prevention Plan in the PMC Business Office SH&E Plan. 		00	L
5. Working in the field at	5.1 Visibility	 5.1.1 Plan to stop work with enough time to return during daylight hours 5.1.2 Adjust tasks or vehicle speed if sun is shining in eyes. Wear sunglasses. 5.1.3 Plan prior to the trip and bring torches/flash lights if dusk/night work is anticipated. 5.1.4 If you plan to pray at dusk in remote desert location, stay well off the roadway and leave vehicle headlights on; roof revolver lit, pay close attention to ground for vector/flora. 			L
night/dusk 5.2 Hypothermia.	5.2 Hypothermia.	5.2.1 Plan prior trip to carry blanket and heavy layered clothing.5.2.2 If vehicle breaks down stay with vehicle; stay inside with window cracked for ventilation; stay off road in safe area not subject to being struck by another vehicle			L
6.0 Rain	6.1 Visibility	 6.1.1 Prior to disembarking do vehicle inspection which includes checking wipers 6.1.2 Bring rain gear if it is rainy season/winter 6.1.3 If possible pull off roadway if rain is very hard/cannot see so as not to confuse oncoming motorists. 			L



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Job Steps	Hazards	Controls	P	S	RAC
	6.2 Drowning	6.2.1 Do not stop in waddles during rain events 6.2.2 Stay away from the creek during high rain/winds event.			L
7.0 Respiratory	7.1 Hazardous Atmosphere/Particulates	7.1.1 Use effective ventilation system 7.1.2 Use proper PPE according to hazard at hand 7.1.3 Stay upwind of sweeping activities			L
Equipment to be Used	Training Requirements/ Competent or Qualified Personnel	Inspection Requirements			
Cell phones/radios	General Safety	Pre-deployment immunizations to include polio.			
Safety boots with ankle protection	Endemic Diseases Awareness Security and Emergency Plan	Inspect PPE prior to use.			
Hard hat	OSHA 10 hr.,				
Safety glasses	HAZWOPER,				
Work gloves	Confined Space Awareness, and FA/CPR				
Face shield	, , , , , , , , , , , , , , , , , , , ,				
Earplugs		y * * * *			

My signature confirms I have reviewed this task and I understand and concur with the job steps, hazards, and controls described in this JHA. (Signature is required of all field team members involved in the task).

Print Name	Signature	Date
	5 9	



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PART 3 – SAFE WORK PROCEDURES



AERIAL LIFT SAFETY

1.1 Description

Aerial lifts may be required for the contractor to perform various tasks such as the removal of Gaylords containing wastes. The following are considered aerial lifts: extendable boom platforms, aerial ladders, articulating boom platforms, powered vertical towers, or any combination of such devices. HDR employees should not need to access aerial lifts, but if required to perform a specific duty, the Aerial Lift Safety and Fall Protection modules should be reviewed. Otherwise, HDR employees should be aware of their operation in the area and avoid areas where piles of the glass may fall over in the event of an accident.

1.2 Hazard Control

Aerial lifts present serious hazards if used improperly, including dangers of falls or electrocution.

Operation of Aerial Lifts

- Operators must be properly trained in the safe use of the equipment.
- The equipment must be inspected before use each day.
- Hydraulic, mechanical, and electrical safety devices must not be overridden.
- Lift must be operated according to manufacturers instructions.
- Contractor crafted or modified platforms can only be ridden by HDR personnel if the contractor can provide written evidence that the lift manufacturer has approved the platform configuration.
- Employees must stand firmly on the floor of the basket at all times no climbing on railings.
- Wheels must be on a solid base; outriggers, if provided, must be used and wheels chocked on incline.
- · Load limits must not be exceeded.
- Danger zone around aerial lift support vehicle must be delineated and marked.
- Employees must never enter an area between stationary objects and the rails of the basket a sudden basket movement could result in the employee being crushed.
- Employees must keep all body parts inside the railing during active platform movement.

1.2.1 Fall Protection

- The aerial lift must be equipped with a fixed fall protective railing system completely enclosing the platform. The rail system must be composed of a top-rail and a mid-rail, at a minimum, and a toe-board.
- Entrance into the basket must be provided via a locking swing gate, that when closed forms part of the fixed rail system.
- The aerial lift platform may not leave the ground until this gate is closed and locked.
- In addition to the fixed railing system, all riders must wear a body harness which is attached to
 a lanyard, which is tied off to the platform (preferably) or boom. This personal fall protective
 system shall be worn at all times when in the aerial lift basket. The lift manual may specify
 where to tie off. If the railing system has a welded attachment point, this is to be used to

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connect the lanyard. As a last resort, the user should tie off to the most stable horizontal member of the railing system.

1.2.2 Electrical Hazards

When using an aerial lift under or near energized overhead electrical lines, the possibility exists of electrocution by either direct contact or by the arcing of electrical current, either one of which could be fatal.

- A minimum clearance distance of ten feet must be maintained from overhead power lines.
- All overhead lines should be treated as if they are energized.
- Tools must remain a minimum clearance distance from energized electrical hazards.

1.3 Personal Protective Equipment

- Personal fall arrest (body harness and lanyard)
- PFD (if applicable)

1.4 Training

Prior to lift operation, HDR personnel must complete the following:

- Review and confirm understanding of HDR SH&E Procedure #036, Aerial Lift Safety
- Aerial Lift Safety Training HDR personnel must learn the operational controls of the lift through hands-on practice. This should be conducted under the direction of the lift owner or lessor. Additionally, HDR operators must have received information and training on the following related topics: the presence of any electrical or physical hazards in the travel route or work area; setup and outrigger placement (if present), the maximum intended load, arm swing radius and extension and the maximum platform capacity; and procedures for dealing with anticipated hazards.
- Fall Protection Training (covers the requirements of HDR SH&E Procedure #012, Fall Protection, and OSHA 29 CFR 1926.500 -.503 - Fall Protection)

A. BIOLOGICAL HAZARDS - INSECTS AND ARACHNIDS

1.1 Description

Insects and arachnids (including spiders, scorpions, mites, and ticks) will be encountered in a variety of outdoor project settings. Table 1 presents descriptions and habitat information for various types of stinging and biting insects and arachnids.

Table 1. Stinging and Biting Insects and Arachnids

Organism	Description	Habitat	Problem	Severity	Protection	
INSECTS						



Organism	Description	Habitat	Problem	Severity	Protection
Bed Bugs	Small, oval, brownish insects. Adult bedbugs have flat bodies about the size of an apple seed. After feeding, however, their bodies swell and are a reddish color.	Enter homes/hotels on luggage, clothing, used beds and couches, etc. Live in groups in mattresses, box springs, bed frames, and headboards where they have easy access to people to bite in the night.	Bites. Lives on the blood of animals and humans.	Most bedbug bites are painless at first but later turn into itchy welts. They do not transmit diseases.	Inspect bed and upholstered furniture and alert hotel staff If you spot a bed bug Keep bags closed and zipped. Never lay luggage, backpacks or clothes on bed or on the floor.
Bees	Variable in size and color, many species ranging in size from microscopic to Bumblebee. European Honey Bee most familiar. Has two pair of wings.	Hollow logs, underground nest, and old buildings.	Stings when annoyed. Honey Bee leaves venom sac in victim. The ripping away of the venom sac kills the individual bee.	If person is allergic, nausea, shock, and constriction of the airway can result. Death may result.	Cover exposed skin. Avoid areas where bees are swarming. Avoid wearing sweet fragrances and bright clothing. Move slowly or stand still when swarming about you.
Flies	One pair of wings; variable in size and color; some species microscopic (biting Midges), others (Horse flies) bumblebee size.	Variable, may range far from wetland breeding areas. Common around rural farmlands, swamps.	Bites. Bloodsucking. Black Flies, Horse flies and Yellow Flies, in particular, can be vicious biters.	Very painful bites. Often more inhibiting during daytime lowland work than mosquitoes.	Wear thick protective clothing. Use plenty of insect repellant.
Hornets	One inch long with some body hair. Abdomen is mostly black.	Round, paper like nest hanging from trees, shrubs, or under eaves of buildings.	Stings. One nest may contain up to 100,000 hornets, which may attack in force at the slightest provocation.	Severe pain, allergic reactions similar to bees. Can be fatal.	Do not come near or disturb nest. If a hornet investigates you, do not move.
Mosquitos	Small, dark, fragile body with transparent wings.	Wherever water is available for breeding.	Bites. Bloodsucking. Itching and swelling result.	Can transmit diseases (see Table 2).	Use insect repellant and wear gloves. Stay in windy areas.



Organism	Description	Habitat	Problem	Severity	Protection	
Wasps	Very thin waist. Color can be black, yellow or orange with stripes.	Underground nest; also paper- like honeycomb nest in abandoned buildings, hollow trees, etc.	Stings. Some species will attack en masse if you disturb or even closely approach the nest.	Severe pain, allergic reactions similar to bees. Can be fatal.	Avoid nests. Do not swat at them.	
	Arachnids					
Chiggers	Microscopic parasitic mite larvae (not an insect)	Fields with high weeds. Common throughout, very common in Southeastern U.S.	Injects anti-clot fluid into tissue and feeds, causing redness, swelling and intense itching. Locates around top of ankles, waistline, under arms.	Not serious or fatal but temporarily irritating due to itching sensation. Allergenic response to injected saliva causes itch.	Avoid walking in weed fields. Cover exposed skin. Apply DEET. Tuck pants inside socks. Shower promptly.	
Spiders	See Sections 6.1.2 and 6.13					
Ticks	See Section 6.1.4					

Table 2. Mosquito-Borne Diseases

Disease	Symptoms	Geographic Distribution
Zika virus	Common symptoms of Zika virus begin 2-7 days after transmission and include fever, rash, joint pain, and red eyes. Other symptoms include myalgia (muscle pain) and headache.	http://www.cdc.gov/zika/geo/ index.html
	Note besides transmission from the bite of a mosquito, Zika virus can also be transmitted through direct contact with a Zika infected person's blood or other body fluids or from a pregnant woman to her fetus.	
	Zika virus has been linked to a serious birth defect of the brain called microcephaly in babies of mothers who had Zika virus while pregnant.	
West Nile virus	Most people infected with West Nile virus will not have any symptoms. About 1 in 5 people who are infected will develop a fever and other symptoms. Less than 1% of those infected develop a serious, sometimes fatal, neurologic illness.	http://www.cdc.gov/westnile/ statsmaps/index.html
Chikungunya virus	The most common symptoms of chikungunya virus infection are fever and joint pain. Other symptoms may include headache, muscle pain, joint swelling, or rash. Outbreaks have occurred in countries in Africa, Asia, Europe, and the Indian and Pacific Oceans. In late 2013, chikungunya virus was found for the first time in the	http://www.cdc.gov/chikungu nya/geo/index.html



	Americas on islands in the Caribbean.	
Dengue	Dengue virus is a leading cause of illness and death in the tropics and subtropics. The principal symptoms are high fever and at least two of the following: •	http://www.healthmap.org/dengue/en
	Severe headache	
	Severe eye pain (behind eyes)	я
	Joint pain	
	Muscle and/or bone pain	
	• Rash	
	 Mild bleeding manifestation (e.g., nose or gum bleed or easy bruising) 	
	Low white cell count∘	
Malaria	People with malaria often experience fever, chills, and flu- like illness. Left untreated, they may develop severe complications which could be fatal.	http://www.cdc.gov/malaria/ about/distribution.html

1.1.1 Black Widow Spider

Black widow spiders are found throughout North America, but are most common in the southern and western areas of the United States. The black widow is a moderately large, glossy black spider with very fine hairs over its body that gives it a silky appearance. The abdomen is a characteristic red, crimson, or yellow marking in the form of an hourglass. Only the female is poisonous; the male, which is smaller, is harmless.

They are usually found in in damp and dark places such as woodpiles, tree stumps, under eaves, fences, under rocks, and trash piles and other areas where debris has accumulated. They may also be found living in outdoor toilets where flies are plentiful.

Black widow spiders build webs between objects, and bites usually occur when humans come into direct contact with these webs. A bite from a black widow can be distinguished from other insect bites by the two puncture marks it makes in the skin. The venom is a neurotoxin that produces pain at the bite area and then spreads to the chest, abdomen, or the entire body.

1.1.2 Brown Recluse Spider

The brown recluse spider, also known as the violin spider, is most commonly found in the Midwestern and southern states of the United States. It is brown in color with a characteristic dark violin-shaped (or fiddle-shaped) marking on its head and has six equal-sized eyes (most spiders have eight eyes). Brown recluse spiders are usually found in workplaces with secluded, dry, sheltered areas such as underneath structures logs, or in piles of rocks or leaves. If a brown recluse spider wanders indoors, they may be found in dark closets, shoes, or attics.

The brown recluse spider cannot bite humans without some form of counter pressure, for example, through unintentional contact that traps the spider against the skin. Bites may cause a stinging sensation with localized pain. A small white blister usually develops at the site of the bite. The venom of a brown recluse can cause a severe lesion by destroying skin tissue (skin necrosis).

1.1.3 Ticks

A tick is a tiny brown mite that attaches itself to the skin of a mammal, bird or reptile and sucks blood. Ticks range in size from one to four millimeters but may greatly enlarge as they consume blood. There



are hundreds of species of ticks and they can be found almost everywhere in woods or grasslands. Ticks are generally most active April through October and peak in the months of June through August.

Lacking wings, ticks climb onto small bushes or tall grass usually close to the ground, and wait for an animal or person to pass near them. They are attracted by carbon dioxide, which is generated during respiratory exhalation. As a host animal or human passes by, they latch on to the skin with their legs, use their "nose" to secure themselves, and cut a hole into the skin by means of a pair of sharp mandibles that saw back and forth. Blood is then sucked into their abdomen until fully engorged, at which time they drop off.

Ticks infected with bacteria, viruses, or parasites can pass diseases (see Table 3) to humans and animals when they attach to the skin to feed. In most cases, an infected tick must be attached for at least 12 hours to transmit pathogens. Symptoms for all tick-borne diseases can include headache, fatigue, muscle aches, and fever. With Lyme disease you may also experience joint pain. Rash symptoms unique to each disease are summarized in Table 3.

Table 3. Tick-Borne Diseases

Disease	Rash Symptoms	U.S. Geographic Distribution
Lyme disease	Circular ("bullseye" appearance) rash may appear within 3-30 days, typically before the onset of fever. Rash occurs in approximately 70-80% of infected persons and begins at the site of a tick bite. It may be warm, but is not usually painful.	Northeast, North Central, Pacific Coast
Ehrlichiosis	In about 30% of adults, a rash appears after the onset of fever.	East, Southeast, Central
Rocky Mountain Spotted Fever	Varies greatly from person to person in appearance, location, and time of onset. Rash occurs in approximately 90% of people. Most often, the rash begins 2-5 days after the onset of fever as small, flat, pink, non-itchy spots on the wrists, forearms, and ankles and spreads to the trunk. It sometimes involves the palms and soles. In some patients, a red to purple, spotted rash is occurs the sixth day or later after onset of symptoms with the infection.	Southeast, Atlantic Coast
Southern Tick- Associated Rash Illness	Nearly identical to that of Lyme disease, with a red, expanding "bulls eye" lesion that develops around the site of a lone star tick bite.	Southeast, Atlantic Coast
Tularemia	A skin ulcer appears at the site where the organism entered the body. The ulcer is accompanied by swelling of regional lymph glands, usually in the armpit or groin.	All States except Hawaii
Babesiosis	Rash is not typical.	Northeast, Midwest, Northwest
Anaplasmosis	Rash is not typical.	Northeast, North Central, Pacific Coast
Colorado Tick Fever	Rash is not typical.	Northwest, Rocky Mountains
Powassan	Rash is not typical.	Northeast



Encephalitis		
Q fever	Rash is not typical.	Throughout the U.S.
Tick-Borne	Rash is not typical.	Rocky Mountains,
Relapsing Fever		Pacific Coast

1.2 Hazard Control

In addition to the protection measures listed in Table 1, the following actions are recommended to prevent insect and arachnid bites and stings:

General

- Do not wear perfumes or colognes when performing field activities as they often attract stinging insects.
- Workers with a history of severe allergic reactions to insect bites or stings should carry an epinephrine auto injector (EpiPen) and should wear a medical identification bracelet or necklace stating their allergy.

Mosquitos/Ticks

- Check the Center for Disease Control and Prevention website for travel notices and updated maps of areas with mosquito and tick-borne disease transmission.
 - http://www.cdc.gov/niosh/topics/outdoor/mosquito-borne/other.html
 - http://www.cdc.gov/ticks/index.html
- Use insect/mosquito repellents containing 20 -30% DEET on exposed skin in accordance with product label instructions and reapply as directed.
- If DEET cannot be used for some reason (such as a personal sensitivity or the potential for cross-contamination when conducting environmental sampling), select an alternative EPA-registered product.
 - https://www.epa.gov/insect-repellents/regulation-skin-applied-repellents
- o Apply sunscreen prior to applying insect repellent.
- Treat clothing and gear with permethrin (see HDR catalog) or purchase permethrintreated items.
- Wear light-colored long-sleeved shirts and long pants so you can easily see ticks on your clothing; tuck your pants into your socks to form a barrier.
- Wear hats with mosquito netting to protect the face and neck.
- Avoid non-essential outdoor activities at sunrise, sunset, and early evening when mosquitoes are most active.
- Avoid high grass if possible and walk in the center of trails to avoid ticks in overhanging grass and brush.
- Check your body, gear, and clothing for ticks, paying close attention to the head, armpits, and groin area. A daily total-body skin inspection greatly reduces the risk of infection since ticks may take several hours to two days to attach to the skin and feed.
- o Put your clothes in a dryer on high heat for an hour to kill any remaining ticks.

Spiders



- Wear protective clothing such as a long-sleeved shirt and long pants, hat, gloves, and boots when handling stacked or undisturbed piles of materials.
- Store apparel and outdoor equipment in tightly closed plastic bags.
- Inspect or shake out any clothing, shoes, towels, or equipment before use to remove spiders.
- Keep your tetanus boosters up-to-date (every 10 years). Spider bites can become infected with tetanus spores.
- Minimize the empty spaces between stacked materials.
- Remove and reduce debris and rubble from around outdoor work areas.
- Trim or eliminate tall grasses from around outdoor work areas.

1.3 Post-Exposure Incident Response

1.3.1 **Tick Removal**

If you find a tick embedded in your skin:

- Remove the tick as soon as you discover it.
- Use fine-tipped tweezers and firmly grasp the tick close to the skin.
- Pull straight up until the tick releases do not jerk, twist, or squeeze the tick.
- After removing the tick, wash your hands, the bite area, and the tweezers with soap and water or use an alcohol-based hand sanitizer or antiseptic.
- Immediately notify your supervisor and call WorkCare at (888) 449-7787.
- Report the incident in IndustrySafe (https://www.industrysafe.com/hdrinc).

1.3.2 All Insect/Arachnid Bites and Stings

Risks from bites and stings include allergic reaction, infection, and transfer of disease-causing agents such as parasites, bacteria, and viruses. General guidelines are as follows:

- Wash the area around the bite/sting with soap and water.
- For bee stings, remove the stinger by gently scraping it out with a blunt-edged object, such as a credit card or dull knife. Don't try to pull it out as this may release more venom.
- If you have any symptoms of an allergic reaction, infection, or illness following a bite or sting occurring at work, regardless of how minor, immediately notify your supervisor and call WorkCare at (888) 449-7787.
- If you have a serious reaction involving any of the following symptoms, seek immediate medical care:
 - Swelling of the throat
 - Abnormal breathing
 - Tightness in throat or chest
 - Fainting







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Report all incidents in IndustrySafe (<u>https://www.industrysafe.com/hdrinc</u>).

1.4 Training

Prior to field work, HDR personnel must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SH&E Procedure #034, Biological Hazards
- HDR University eLearning Biological Hazards: Insects
- HDR University eLearning Biological Hazards: Arachnids

A. BIOLOGICAL HAZARDS - MAMMALS

1.1 Description

The building has not been occupied and there is a potential for small rodents, bats or other small mammals to be encountered.

Encounters with mammals are potentially dangerous either from traumatic injury due to direct contact or from infectious diseases that are carried by them or their parasites (see Section 10.0 for details on rabies, hantavirus, and histoplasmosis). Animal species that could be encountered depend on geography and will vary in size and ferocity. Mammals most likely to attack humans in North America are feral animals, bears, mountain lions, and moose.

1.2 Hazard Control

General precautions are as follows:

- Be aware of the appearance and habitat of animals you are likely to encounter and plan accordingly based on the danger these animals pose.
- Complete the HDR University eLearning Biological Hazards: Mammals
- Do not setup near obvious animal nests or burrows.
- Keep food and garbage stored in sealed containers.
- Wear clothes made of tightly woven materials and tuck pants into boots.
- Minimize the amount of time you use lights after dark because light may attract animals.
- Don't touch rodents or other mammals, dead or alive.
- Do not attempt to feed animals.

1.2.1 Feral Animals

Employees conducting work at landfills, abandoned buildings, or urban project locations may encounter feral animals. A feral animal is any formerly domesticated animal that is now living as a wild animal. They are particularly dangerous because their appearance as a familiar pet causes people to assume they will act like one and, former association with people often causes feral animals to act without fear of humans. Feral dogs can become pack oriented, very aggressive, and represent serious risk of harm to unprotected workers.

- Do not feed, chase, act threatening or call to these animals or try to pet them.
- If the animal acts in a threatening manner, back away while facing the animal.

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1.3 Training

Prior to field work, HDR personnel must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SH&E Procedure #034, Biological Hazards
- HDR University eLearning Biological Hazards: Mammals

1.0 BIOLOGICAL HAZARDS - PATHOGENS AND DISEASE

1.1 Description

The building has not been occupied and there is a potential for small rodents, bats or other small mammals to be encountered.

Disease-causing pathogens can be carried or transmitted by animals or be encountered in soil, air, or water.

1.2 Hazard Control

1.2.1 Rabies

Rabies is a fatal viral infection of the brain that may follow the bite of a rabid animal. The disease only affects warm-blooded animals. Animals that can be infected with rabies include all mammals, but in particular:

- Wild animals--primarily bats, foxes, skunks, and raccoons
- Livestock--mostly cattle but occasionally horses, sheep, goats, and pigs
- Domestic cats and dogs
- · Wolves, coyotes, and other meat-eating mammals

If you will be working with species with a high risk of rabies, obtain the rabies vaccine (see SH&E Procedure #035, *Medical Monitoring*). Pre-exposure vaccination greatly reduces, but does not eliminate, the need for post-exposure treatment.

Avoidance and protection protocols include watching for animal dens, using good housekeeping to discourage foraging, and using repellents (visual-wear bright clothing, audio-announce your approach or presence with loud whistling, talking, radios, etc., and chemical such as pepper spray, etc.).

Be aware that all animals do not behave in the same manner when they have rabies.

- Foxes and skunks may lose their shyness and fear of people, pets, or livestock. Back away from any wild mammal that is acting unafraid.
- Cattle usually become restless and aggressive, bellow loudly, drool, may show weakness in the hind legs, and appear to be choking.
- Cats can often become extremely vicious.
- Dogs usually become excitable, wander aimlessly, and may be vicious and bite for no reason.

If an animal is threatening and dangerous and cannot be scared away, or is suspected of having rabies, withdraw, call 911, request the services of local police or animal control personnel, and continue to observe its movements (if possible).

If an animal must be killed, try to avoid damaging its head. An undamaged brain is important for a rapid, accurate laboratory diagnosis. Do not handle the animal or carcass (but if necessary, for any reason, wear protective gloves, masks, and goggles).







Workers who may have been exposed to rabies must never wait until they develop symptoms of the disease. Once the symptoms appear, the disease is almost inevitably fatal.

If you have been scratched or bit or have otherwise come into contact with saliva, body fluids, or tissue of animals suspected of having rabies, take the following steps without delay:

- Immediately clean the wound with soap and flush with water for several minutes. Washing the wound is probably the most effective procedure in the prevention of rabies. While this is being done, shield the eyes, nose, and mouth from spray from the wound.
- Remove any clothing that may be contaminated, place it in a plastic bag properly labeled and wash it promptly and separately from other clothing.
- Notify your supervisor and call WorkCare at (888) 449-7787.
- Contact the police or local humane society to request help finding and identifying the offending animal.

1.2.2 Hantavirus

Hantavirus is a virus present in the urine, saliva, or droppings of infected deer mice and other wild rodents. Hantavirus causes a rare but serious lung disease called Hantavirus Pulmonary Syndrome (HPS). The disease begins as a flu-like illness. In the early stage, a worker may experience fever, chills, muscle aches, headaches, nausea, vomiting, and shortness of breath. However, the disease progresses rapidly and infected people experience an abnormal decrease in blood pressure and their lungs will fill with fluid.

People can contract the Hantavirus infection through inhalation of respirable droplets of saliva or urine, or through the dust of feces from infected wild rodents. Transmission can also occur when contaminated material gets into broken skin, or possibly, ingested in contaminated food or water.

When working in areas where the disease has been reported, take the following precautions to reduce the likelihood of exposure to potentially infectious materials:

- Avoid coming into contact with rodents and rodent burrows or disturbing dens (such as rat nests).
- When performing project work that requires entry into confined spaces, where obvious signs
 of rodent infestation are present, wear disposable gloves and a NIOSH-approved respirator
 with a high efficiency particulate air (HEPA) filter to prevent inhalation of fecal dust
 (requirements that must be met to wear a respirator include medical clearance, annual
 training, and annual fit testing; see HDR SH&E Procedure #009, Respiratory Protection).
- Do not dwell in areas that are in proximity to rodent droppings or burrows or near areas that may shelter rodents or provide food for them (e.g., woodpiles, large supplies of birdseed).
- Keep food, birdseed, etc. in rodent-proof containers.

The disease begins as a flu-like illness. In the early stage, a worker may experience fever, chills, muscle aches, headaches, nausea, vomiting, and shortness of breath. However, the disease progresses rapidly and infected people experience an abnormal decrease in blood pressure and their lungs will fill with fluid. Immediately notify your supervisor and call WorkCare at (888) 449-7787 if potentially exposed to hantavirus. Report all incidents in IndustrySafe (https://www.industrysafe.com/hdrinc).

1.2.3 Histoplasmosis

Histoplasmosis is an infectious disease of the lungs caused by inhalation of a fungus, Histoplasma capsulatum. The infection sometimes can spread to other parts of the body. Histoplasma c. thrives in



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moderate temperatures and moist environments. Droppings from chickens, pigeons, starlings, blackbirds, and bats support its growth.

Birds are not infected with it because of their high body temperatures, but they can carry it on their feathers. Bats can be infected and can excrete the organism in their droppings. The symptoms of the infection appear within 5 to 18 days after exposure, most commonly in ten days.

HDR employees at potential risk for exposure are those whose job duties involve contact with soil enriched with bird and bat droppings. Prevention of histoplasmosis relies on avoiding exposure to soil/dust in a contaminated environment.

- Persons working in known contaminated areas should wear disposable coveralls, gloves, boots, hats, and a NIOSH-approved full face respirator with a HEPA filter or a supplied air respirator with full face piece (requirements that must be met to wear a respirator include medical clearance, annual training, and annual fit testing; see HDR SH&E Procedure #009, Respiratory Protection).
- Seal the glove/sleeve and boot/leg interfaces with duct tape before entering the worksite.
- Water sprays or other dust suppression techniques should be used to reduce the amount of dust aerosolized during construction, excavation, or demolition in regions where Histoplasma capsulatum is endemic.
- During windy periods or other times when typical dust suppression techniques are ineffective, earthmoving activities should be interrupted.
- Before leaving the site, vacuum the protective coveralls, boots, and gloves using a HEPA
 vacuum, then walk to an excrement free area, remove the protective clothing, and place it in
 plastic bags prior to removing respiratory protection. Treat disposable clothing believed to be
 contaminated with disease agents as infectious waste.
- Non-disposable work clothing and respirators should be removed, placed in a plastic bag, and sealed. These items must be disinfected in the bag before final cleaning and reuse.
- If the disposable coveralls or other protective clothing are torn, workers must shower prior to
 putting on their street clothes. It is recommended that workers shower and thoroughly wash
 their hair at the end of their shift.

Immediately notify your supervisor and call WorkCare at (888) 449-7787 if potentially exposed to bird and bat droppings. Report all incidents in IndustrySafe (https://www.industrysafe.com/hdrinc).

Most patients who develop histoplasmosis do not require treatment. Some may only require supportive treatment that relieves the symptoms of the disease. Severe symptoms with a large involvement of the lungs require treatment with specific antifungal drugs. There are five different forms of infection, as follows:

- Asymptomatic is when the victim does not show any symptoms and is unaware of the infection.
- Acute disseminated involves short-term affects to organs other than the lungs. It is usually
 confined to young children and is marked by fever, cough, exhaustion and enlargement of the
 liver and spleen.
- Acute benign respiratory is produced by a heavy exposure and marked by weakness, fever, chest pains, and cough. The severity of the symptoms depends upon the magnitude of the exposure.
- Chronic disseminated is of long duration (chronic) and it involves other organs outside of the lungs. It occurs in people with a reduced capacity to fight disease, such as patients with



leukemia and persons being treated with drugs that suppress the body's immune system. The chronic disseminated form is marked by fever, anemia, hepatitis, pneumonia, inflammation of the lining of the heart cavity, meningitis, and ulcers of the mouth, tongue, nose and larynx. Disabling.

 Chronic pulmonary occurs in persons with pre-existing lung diseases such as emphysema. It resembles tuberculosis and is more common in males over 40 years of age.

1.2.4 Legionnaires' Disease

Legionnaires' disease is contracted by breathing in aerosolized water and/or soil contaminated with the Legionella bacteria. The bacterium is found naturally in fresh water. It can contaminate ornamental fountains, hot water tanks, hot tubs, and cooling towers of large air conditioners. The disease is particularly associated with hotels, fountains, cruise ships, and hospitals with complex potable water systems and cooling systems. Outdoor job assignments where soil is disturbed by bulldozing, and areas where surface or aerosolized water discharge occurs may also be at risk. The prevention of Legionella infection is best achieved by good engineering practices in the operation and maintenance of air and water handling systems.

Legionnaires' disease usually begins with a headache, pain in the muscles and a general feeling of unwellness. These symptoms are followed by high fever (up to 40°-40.5°C or about 104°-105°F) and shaking chills. Nausea, vomiting, and diarrhea may occur. On the second or third day, dry coughing begins and chest pain might occur.

Immediately notify your supervisor and call WorkCare at (888) 449-7787 if you are exposed to a known source of Legionella or if you develop symptoms of Legionnaire's disease following exposure to hot water tanks, cooling towers, etc. Report all incidents in IndustrySafe (https://www.industrysafe.com/hdrinc).

1.2.5 Valley Fever

Valley Fever is primarily a disease of the lungs that is common in the southwestern United States and northwestern Mexico. It is caused by the fungus Coccidioides immitis, which grows in soils in areas of low rainfall, high summer temperatures, and moderate winter temperatures. Resistant spores, produced by this fungus, become airborne when the soil is disturbed by winds, construction, farming and other activities. These spores are the infective agent.

Valley Fever is prevalent in the San Joaquin and Central Valleys of California, and in the hot, desert regions of southern Arizona (especially in the Phoenix and Tucson areas), southern Nevada, southern Utah, southern New Mexico, western Texas (especially around El Paso), Mexico (in the states of Sonora and Chihuahua), and in semiarid and arid areas in Central and South America.

Employees with potential risk of exposure are those assigned duties involving disturbance of desert soils, particularly around rodent burrows, Indian ruins and burial grounds. In these settings, infections are more likely to be severe because of intensive exposure to a large number of spores. Exposure to windstorms or recently disrupted soils may increase the chances of infection. Valley Fever infections are more prevalent during certain seasons. In Arizona, the highest incidence of infection occurs during June and July, and October through November. In California, the risk of infection is highest from June through November, without the late summer break.

- Determine if the worksite is in an area where Valley Fever is endemic. Check with the local health department to determine whether cases have been known to occur in the proximity of your work area.
 - o Arizona Department of Health Services Valley Fever
 - California Department of Public Health Valley Fever



- When soil will be disturbed by heavy equipment or vehicles, wet the soil before disturbing it
 and continuously wet it while digging to keep dust levels down.
- Position workers upwind when possible.
- Suspend work during heavy wind or dust storms and minimize amount of soil disturbed.
- Persons working in known contaminated areas should wear disposable coveralls, gloves, boots, hats, and a NIOSH-approved respirator with a HEPA filter (requirements that must be met to wear a respirator include medical clearance, annual training, and annual fit testing; see HDR SH&E Procedure #009, Respiratory Protection).

Valley Fever symptoms generally occur within three weeks of exposure. Most cases are very mild. It is thought that over 60% of infected people have either no symptoms or experience flu-like symptoms and never seek medical attention. Of those patients seeking medical care, the most common symptoms are fatigue, cough, chest pain, fever, rash, headache, and joint aches. Some victims develop painful red bumps on their shins or elsewhere that gradually turn brown.

Following work in endemic areas, if you experience any of these symptoms, immediately notify your supervisor and call WorkCare at (888) 449-7787.

1.2.6 Tetanus

Tetanus is a serious illness that can occur after an injury with a contaminated object. The bacteria that cause tetanus are commonly found in soil, dust and manure and enter the body through breaks in the skin - usually cuts or puncture wounds caused by contaminated objects.

Immunization is the best way to prevent tetanus. Immunization is generally given in childhood and should be repeated every 10 years throughout adulthood. Immediate and proper wound care can also help prevent infection. Report all incidents in IndustrySafe (https://www.industrysafe.com/hdrinc). For non-emergency injury incidents, immediately notify your supervisor and call WorkCare at (888) 449-7787.

1.2.7 Waterborne Pathogens

Waterborne pathogens are found in nearly all surface water systems and many groundwater systems and can cause various diseases (including Leptospirosis, Cryptosporidiosis, and Giardiasis). For a comprehensive list of water-related diseases and contaminants, visit the CDC website (http://www.cdc.gov/healthywater/disease/type.html).

Most pathogens originate from body fluids and feces of animals and humans, although some are normal environmental inhabitants.

- Pathogens can enter surface water through sewage discharge and spills, animal feedlot operations, landfills, storm and agricultural runoff, and direct contact.
- Pathogens can also be transported on small particles such as dust or aerosols.
- Pathogens can enter groundwater through infiltration from septic tank effluent, leachate from fields and ponds, and from faulty well seals and casings.

The most common means of contracting these pathogens is by drinking contaminated water and through accidental ingestion from direct contact or splashing (particularly when performing sewer inspection services.

- Never drink untreated water from streams, lakes, rivers, ponds, etc., no matter how pristine the environment appears.
- If contact or immersion in water is required:



- o Receive vaccinations as appropriate (typhoid, tetanus, hepatitis, polio).
- Protect open cuts or wounds.
- Avoid hand-to-mouth contact (never eat, drink or put items in your mouth).
- Wear waders or rubber boots, gloves, and coveralls to prevent skin contact and goggles/face shields to prevent contact with spray and splashes.
- Evaluate the need for use of a respirator.
- Wash your hands and scrub under nails with antibacterial soap and clean, running water immediately following exposure and shower as soon as possible.

If you have come in contact with water suspected or known to be contaminated:

- Immediately notify your supervisor and call WorkCare at (888) 449-7787.
- Report the incident in IndustrySafe (https://www.industrysafe.com/hdrinc).

1.3 Training

Prior to field work, HDR personnel must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SH&E Procedure #034, Biological Hazards
- HDR University eLearning Biological Hazards: Hanta Virus

1.4 Medical Monitoring/Vaccinations

- Up-to-date tetanus vaccination (routine adult vaccination)
- Rabies vaccination (contact Corporate SH&E to schedule)

A. COLD STRESS

1.1 Description

Cold stress can result in lowered core body temperature, reduced mental alertness, reduction in rational decision-making, cold injury to bodily extremities, or loss of consciousness with the threat of fatal consequences. Exposure to cold air or immersion in cold water, even at temperatures well above freezing, can lead to hypothermia.

1.2 Cold-Related Injuries/Illnesses

Cold related injuries require immediate removal from the cold environment and proper medical treatment. The supportive first aid measures included here are to be used only until proper medical treatment by a qualified physician can begin.

1.2.1 Hypothermia

Hypothermia results when the body core temperature falls below 95° F (35° C). If the body core temperature drops below this critical level, the victim cannot produce enough body heat to recover. Prolonged exposure to cold air or to immersion in cold water at temperatures well above freezing can lead to hypothermia. Hypothermia is a medical emergency. Untreated, it can lead to ventricular fibrillation (heart attack) and death.

Signs and symptoms of hypothermia:

Uncontrollable shivering

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- Dizziness
- Weakness
- Slurred speech
- Impaired judgment, disorientation, or incoherence
- Apathy, listlessness, or sleepiness
- Decreased pulse and breathing rates
- Loss of consciousness

Hypothermia first aid:

- Call for emergency medical services (EMS).
- Remove the victim to a warm area out of any wind.
- Remove all cold and/or wet clothing.
- Wrap in warm blankets.
- If conscious and able to converse, give the victim warm (non-caffeinated, non-alcoholic) liquids to drink.
- Keep the victim awake until medical assistance arrives.

1.2.2 Frostbite

Pain in the extremities is commonly the first early warning sign of the onset of cold stress. While frostbite (the actual freezing of body tissue) will occur only at absolute temperatures below freezing (32° F (0° C)) (regardless of wind speed), unpleasant cold sensations in extremities may be felt at higher temperatures and heat loss in extremities can assist in the onset of hypothermia. Extremities most commonly affected are your toes, fingers, nose, and ears.

Frostbite can also occur when bare skin comes into contact with objects whose surface temperature is below freezing (despite warm ambient temperatures) or when skin is exposed to either an escaping gas with a high vapor pressure or a liquid with a very low boiling point. Examples include liquid ammonia, gasoline, and other alcohols. All liquids must have heat added to them in order to evaporate. The liquid acquires the necessary heat from its immediate surroundings. If the liquid is on human skin, the heat will be drawn from the warm skin surface, resulting in very rapid cooling of the skin surface.

Frostbite damage may be reversible if properly treated in the first 12 to 24 hours. Sometimes the area is particularly sensitive to cold for months or years afterward. If not treated, frostbitten areas may become gangrenous.

Signs and symptoms of frostbite:

- Sharp prickling sensation in affected area
- Area feels cold and numb
- Incipient frostbite (frostnip) skin is blanched or whitened (because of a lack of oxygen) and feels hard on the surface
- Moderate frostbite large blisters
- Deep frostbite tissues are cold, pale, and hard

Frostbite first aid:

For minor frostbite:



- Gradually warm the affected body parts by placing them next to warm skin (such as the abdomen and the armpit).
- Contact WorkCare (888-449-7787) for further guidance.

For more serious frostbite:

- When EMS is available, or there is any chance that the part may refreeze (for example, you are in a remote site and warming up in a shelter but must return to the cold to get back to your vehicle/permanent shelter), do not try to rewarm the frostbitten area. If a frostbitten area is rewarmed and gets frozen again, more tissue damage will occur. It is safer for the frostbitten area to be rewarmed by medical professionals.
- If EMS is not readily available, and there is no chance refreezing will occur, rewarm
 the affected body part by immersing it in warm water for 20 to 30 minutes. The water
 should be just above normal body temperature (not too hot).
- Loosely cover and protect the area from contact.
- o Do not rub the frostbitten part, and do not break any blisters.
- Provide warm drinks (non-caffeinated, non-alcoholic), and do not let the victim smoke.
- Be aware that the tissue may itch and/or hurt intensely as it thaws.
- o The victim should not use the affected limb or area until cleared by a physician.

1.2.3 Raynaud's Disease

Raynaud's Phenomenon, also called "white fingers," is a vascular abnormality characterized by a loss of circulation in the fingers and/or toes associated with exposure to cold and/or vibration. The onset of Raynaud's Phenomenon is gradual, and is characterized by several stages. The initial stage is manifested by occasional pain, and a slight loss of hand sensitivity. If removed from cold and vibration, it is usually reversible at this stage. As the condition worsens, pain and numbness increases, and finger sensitivity decreases. As the blood vessels are damaged, blood flow slows and the skin temperature decreases. In the pronounced stages, fingers become white and the hands feel cold and moist. At this point, the condition is irreversible. Employees who routinely work in cold environments should limit the duration that they use rotating or vibrating tools.

Signs and symptoms of Raynaud's Phenomenon:

- Cold fingers or toes
- · Color changes in your skin in response to cold
- Numb, prickly feeling or stinging pain upon warming
- · Loss of sensitivity in fingers or toes

Raynaud's Phenomenon first aid:

- Remove worker from cold and vibration
- Treat similar to frostbite

1.2.4 Immersion Foot

Immersion foot, also known as trench foot, is an injury of the feet resulting from prolonged exposure to wet and cold conditions. Trench foot can occur at temperatures as high as 60 °F if the feet are constantly wet. Injury occurs because wet feet lose heat 25-times faster than dry feet. Therefore, to



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prevent heat loss, the body constricts blood vessels to shut down circulation in the feet. Skin tissue begins to die because of lack of oxygen and nutrients and due to the buildup of toxic products.

Signs and symptoms of immersion foot:

- · Reddening of the skin
- Numbness
- Swelling
- Tingling pain
- Blisters or ulcers
- Bleeding under the skin

Immersion foot prevention:

- Put on clean, dry socks daily.
- Thoroughly clean and dry the feet after exposure.
- When sleeping or resting, do not wear socks.

Immersion foot first aid:

- Remove shoes/boots and wet socks
- Treat similar to frostbite

1.3 Hazard Control

Project management must make sure that field staff are provided with adequately insulated personal protective clothing, fluids, and warm up shelters as needed prior to cold weather project initiation. Team leaders should remind staff to drink adequate fluids, change wet clothing, and take warm up breaks as necessary during project execution.

The following prevention practices for working in cold environments apply to healthy employees in fair to good physical condition. Older employees or those with circulatory problems may need to avoid extremely cold environments or wear extra clothing. Workers who are suffering from diseases or taking medication that interferes with normal body temperature regulation, or which reduces tolerance to cold environments, should be excluded from prolonged work in cold below 30° F (-1° C).

Know the weather conditions.

- Wind chill is the term used to describe the rate of heat loss from the human body, resulting from the combined effect of low air temperature and wind speed. The Wind Chill Temperature is a single value that takes both air temperature and wind speed into account. It is essentially the air temperature that would feel the same on exposed human flesh as the given combination of air temperature and wind speed.
- It is important for field teams to know the wind chill temperature so they can gauge exposure risk and plan how to safely do the work. Check weather reports and preplan so that work is performed during the warmest periods of the day.
- o Limit the use of rotating or vibrating tools in cold environments.

· Wear appropriate clothing.

Wear at least three layers of loose fitting clothing. Layering provides better insulation.
 Trapped air between the layers is the best insulation and layers can be removed to avoid sweating and subsequent chill.



- An inner layer of wool, silk or synthetic to keep moisture away from the body.
 (Cotton loses its insulation value when it becomes wet. Wool, silk and most synthetics, on the other hand, retain their insulation even when wet.)
- A middle layer of wool or synthetic to provide insulation even when wet.
- An outer wind and rain protection layer that allows some ventilation to prevent overheating.
- Wear a hat or hood to help keep your whole body warmer. Hats reduce the amount of body heat that escapes from your head.
- Wear a knit facemask, scarf, or other covering to cover the face and mouth and protect the lungs from cold air.
- o Use insulated gloves to protect the hands (water resistant if necessary).
 - If the task precludes the wearing of mittens or gloves, establish special provisions to allow the workers to frequently warm their hands (e.g., provide battery-operated hand warmers, contact warm plates, or radiant heaters).
- o Wear insulated and waterproof boots (or other footwear).
 - Use of steel-toed safety shoes may become uncomfortable, as low ground temperatures are transmitted to the user's feet. It may become necessary to substitute alternative protective footwear, such as high impact plastic/rubbercomposition footwear, during cold periods.
- Cover all exposed skin in wind chills at or below -25° F (-32° C).
- Wear safety glasses/goggles possessing ultraviolet/glare protection when there is an expanse of snow coverage causing a potential eye hazard from blowing ice crystals or reflective radiation.
- To prevent contact frostbite, avoid bare skin to metal contact at absolute temperatures below freezing, 32° F (0° C). Metal tool handles should be covered by insulation. Or, alternately, where fine manual dexterity is not required, insulating gloves may be worn.
- When cold surfaces below -7°C are within reach, a warning should be given to prevent inadvertent contact with bare hands.

Stay dry.

- Provide extra insulating clothing on site so wet or damp clothing can be changed as soon as possible.
- If the work involved presents the possibility of becoming wet through splashing, wear an outer layer of impermeable clothing.
- At air temperatures of 35.6°F (2°C) or less, if a worker becomes immersed in water or their clothing becomes wet (from external sources, not incidental sweat) immediately provide a change of clothing and observe for symptoms of hypothermia.

Pace the work and take breaks.

- Pace the work to avoid excessive sweating. If such work is necessary, establish a schedule for rest periods in a warm area and have employees change into dry clothes.
- Provide new employees time to get acclimated to the cold and the use of protective clothing before they assume a full work load.

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 For continuous work in temperatures below the freezing point, provide a heated warming shelter (car, rest room, tent, office, etc.). When entering the shelter, remove the outer layer of clothing and loosen the remainder of clothing to permit the evaporation of sweat.

· Use the buddy system.

- For work in cold environments, use the buddy system to ensure constant protective observation.
- Monitor one another's physical condition during tasks, especially new workers who
 may not be used to working in the cold and workers returning after spending time
 away from work.

Take precautions when working with evaporative liquids.

Take extra care when handling evaporative liquids (gasoline, alcohol, cleaning fluids, etc.) at air temperatures below 39.2° F (4° C). If these liquids are soaked into clothing or gloves, the subsequent rapid evaporative cooling can result in frostbite.

Maintain proper eating and drinking.

- Provide warm sweet drinks and soups to replenish caloric intake and fluid volume.
 Food provides fuel to be burned and warm fluids directly provide heat and prevent dehydration.
- Limit the intake of coffee because of the diuretic and circulatory effects. The same applies to alcohol consumption, which increases blood circulation to the skin, and interferes with mental acuity, which can lead to risk taking.

Be cognizant of the signs and symptoms of cold-related injuries/illnesses.

 Immediately terminate exposure to cold and return to the shelter if experiencing observable shivering, pain in extremities, excessive fatigue, or drowsiness.

1.4 Personal Protective Equipment (PPE)

See hazard control bullets above for wear appropriate clothing and stay dry.

1.5 Training

Prior to field work, HDR personnel must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SHE& Procedure #029, Cold Stress
- HDR University eLearning Cold Stress

A. HAZARD COMMUNICATION

1.1 Description

The televisions contain a number of inorganic compounds including lead, chromium, and other heavy metals.

1.2 Hazard Control

Prior to bringing hazardous chemicals to the project site, HDR will:

Train HDR employees in Hazard Communications,



- Obtain an SDS for each hazardous chemical,
- Ensure containers are labeled in accordance with OSHA 29 CFR 1910.1200, Hazard Communication.

When in use at the project site, HDR will:

- · Properly transport and store chemicals,
- Alert contractors, sub-contractors, and clients of potential hazardous exposure,
- Identify and provide prescribed Personal Protective Equipment,
- · Understand and follow all emergency procedures for spill or release of the chemical, and
- Properly dispose of any unused chemicals.

In cases where HDR employees may be exposed to hazardous chemicals on site that are generated by another contractor, HDR will:

- Request an summary of the operation that is generating the exposure be relayed to the HDR onsite team leader, and a SDS be provided;
- Communicate information about these potential hazards to project team,
- Ensure all HDR employees have received Hazard Communication training, and
- · Identify and provide prescribed Personal Protective Equipment.

1.3 Personal Protective Equipment (PPE)

PPE includes thick gloves that will prevent cutting due to glass, and inner gloves to prevent dusts and heavy metals from contacting the skin. Frequent handwashing is suggested.

1.4 Training

Prior to field work, HDR personnel who use or could be exposed to chemicals must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SH&E Procedure #006, Hazard Communication
- HDR University eLearning Hazard Communication
- Hands-on training and information regarding the specific chemicals to be used and hazards to which employees are likely to be exposed.

A. HAZARDOUS & TOXIC WASTE

1.1 Hazardous Waste Operations and Emergency Response (HAZWOPER) Projects

When our projects are known or reasonably suspected to harbor hazardous substances, all project field staff must operate in accordance with HDR SH&E Procedure #020, Hazardous and Toxic Waste. All work conducted on a hazardous waste site requires development of a separate definable HazWoper Health and Safety Plan (HASP) covering the regulatory requirements of OSHA Standard(s) 29 CFR 1910.120/1926.65, Hazardous Waste Operations and Emergency Response (commonly referred to as "HazWoper"), and also codified by EPA as 40 CFR Part 311 (an example plan template is available on the SH&E portal).

HazWoper fieldwork also requires appropriate formal training, PPE usage, and medical clearance. For specific HazWoper questions, contact corporate SH&E.

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These standards apply to the following:

- Clean-up operations required by a governmental body, whether federal, state, local, or other involving hazardous substances.
- Corrective actions involving clean-up operations at sites covered by the Resource Conservation and Recovery Act of 1976 (RCRA).
- Voluntary Client [hazardous substance] clean-up operations.
- Operations involving hazardous wastes conducted at Treatment, Storage, and Disposal (TSD) facilities regulated under 40 CFR Parts 264 and 265 pursuant to RCRA, or by agencies under agreement with U.S. Environmental Protection Agency (EPA) to implement RCRA regulations.

1.2 All Other Field Projects

There is always the potential of accidentally uncovering or encountering hazardous wastes when performing intrusive field activities. Be on the lookout for the following signs that you may have discovered the presence of potential hazardous wastes:

- Stained soil, especially stained areas that are emitting a distinct odor. These may be observed either on the soil surface or in underlying soil strata
- Groundwater, that when pulled to the surface via piezometers, wells, etc., has a visible
 floating oily layer, is likely contaminated with a hazardous waste such as petroleum based oils
 or lubricants. Other non-miscible contaminants may be heavy "sinkers" and roll around the
 bottom of surface or groundwater aquifers in globules. Other groundwater contaminants
 readily mix in water and may cause the water to smell. All are signs of the presence of
 potential hazardous wastes.
- The discovery of buried drums or intact containers. These may have historically been intentionally buried to get rid of them but they may still contain hazardous wastes. Do not move or continue to unearth.

If any of these field conditions are encountered, stop work immediately, move away and contact the project manager. These potential sources of contaminants need to be examined and sampled by someone trained and knowledgeable in the HAZWOPER regulations and sampling protocol.

1.3 References

HDR SH&E Procedure #020, Hazardous and Toxic Waste

A. HEAT STRESS

SITE-SPECIFIC HEAT ILLNESS PREVENTION CHECKLIST

Project:	Location:
SH&E Representative ² :	Date:

² See HDR SH&E Management System – 006: *Project Management SH&E Standard*. All field work assignments require designation of an on-site SH&E Representative.



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HDR SH&E Procedure #028, *Heat Stress*, requires that supervisors and project teams develop and document site-specific heat illness prevention procedures for assignments involving exposure to the following:

- Working in environments with a temperature at or approaching 80°F (26.7°C)³
- Performing extended services in the proximity of radiant heat sources (foundries, etc.)
- Wearing semi-impermeable or impermeable clothing in temperatures exceeding 69.8°F (21°C)

ite Specific Procedures

³ Regardless of temperature, access to water, shade, first aid, and emergency services must be provided at all sites.



Indicate how the following extra precautions will be implemented for work in high-heat and/or a heat wave:	
 Communication by voice, observation, or electronic means will be maintained to contact a supervisor when necessary. 	
 The buddy system and/or regular communication between employees and supervisors will be used to monitor one another for alertness and signs/symptoms of heat illness. 	·
 Physiological monitoring will be conducted and work cycles adjusted accordingly (see attached Heat Stress Log). 	
 Employees will be reminded throughout the shift to drink water. 	
Acclimatization	
For assignments in high-heat and/or a heat wave, describe the plan for acclimatization to allow workers time to adjust.	
Example: workers should begin day 1 in excessive heat with 50% of the workload/time spent in the heat, 60% on day 2, 80% on day 3, and 100% on day 4.	
New workers and those returning from a prolonged absence should begin with 20% of the workload on day 1 and increase no more than 20% each subsequent day.	

My signature confirms I have reviewed and concur with these procedures. (Signature is required of all field team members at the site).									
Print Name Signature Date									

Table 1. Heat Illness Signs, Symptoms, and Treatment

Condition/Cause	Signs and Symptoms	Treatment
Heat Cramps Electrolyte imbalance	Painful muscle cramps or spasms	 Provide cool electrolytic fluids such as sports drinks. Contact WorkCare (888-449-7787) for consultation.
Heat Syncope Rapid dilation of blood vessels	Fainting	 Move to a cool area and elevate feet. Provide cool drinking fluids. Contact WorkCare (888-449-7787) for consultation. Do not allow a victim of fainting to return to work until authorized by WorkCare or another medical provider.
Heat Exhaustion Body's ability to cool itself is	Profuse perspirationNausea	Move to a cool area.Loosen clothing.Provide cool drinking fluids.

⁴ High-heat is a temperature >95°F (35°C) and/or a Heat Index in the Danger Zone or above (see Figure 1). A heat wave is any day in which the predicted high temperature for the day will be >80°F (26.7°C) and at least 10°F (5°C) higher than the average high daily temperature in the preceding five days.

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overwhelmed	•	Pale	•	Contact WorkCare (888-449-7787).
			•	Do not allow a victim of heat exhaustion to be exposed to a hot working environment for a minimum of 24 hours.
Heat Stroke Life threatening	•	Dry, hot, and flushed skin	•	Immediately call 911. Cool the body rapidly by immersion in cool (not
condition from disturbance of	•	Convulsions		cold) water or sponging with cool water.
body's heat-	•	Delirium	•	Do not give coffee, tea, or alcoholic beverages.
regulating mechanism	•	Unconsciousness	•	Do not allow a victim of heat stroke to return to work until authorized by a medical provider.

Figure 1. National Weather Service Heat Index

Temperature (°F)

	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132	100									

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution Extreme Caution Danger Extreme Danger



HEAT STRESS LOG

Project:	 f	
Location:	 **************************************	

Physiological monitoring of exposed workers is required under the following conditions:

- Performing extended services in the proximity of radiant heat sources (foundries, etc.).
- Temperatures exceeding 69.8°F (21°C) when wearing semi-impermeable or impermeable clothing.
- Temperatures exceeding 80°F (26.7°C) when:
 - o Performing physically demanding work (excessive lifting, climbing, digging, etc.).
 - An employee has a history of heat illness.
 - The Heat Index is in the Danger Zone or above (see Figure 1).

Heart Rate

- Each individual will count his/her radial (wrist) pulse for 30 seconds upon arriving at the site and as
 early as possible at the beginning of each rest period (breaks, lunch, and end of workday).
- If the heart rate of any individual exceeds 110 beats per minute at the beginning of a rest period, the subsequent work cycle will be decreased by one-third. The rest period length will remain the same.

Aural Temperature

- Each individual will measure his/her aural (ear) temperature with an electronic ear clip/scan thermometer at the same time, and on the same schedule, as the pulse readings.
- If the aural temperature exceeds 99.6°F (37.5°C) at the beginning of the rest period, then the work cycle will be decreased by one-third.
- At no time will any employee's aural temperature be allowed to exceed 100.4°F (38°C). If exceedance occurs, the employee must rest in a cool location, be provided cool drinks (non-caffeinated, non-alcoholic), and not return to the hot work environment until the following day.

Employee Name	Date & Time	Air Temperature	Percent Sunshine	Heart Rate	Aural Temperature



A. RESPIRATORY PROTECTION

1.1 Description

This should not be required, and in cases where the contractor is donning full face respirators, the HDR personnel shall vacate to a safe distance. If unable to vacate, a full face respirator with a HEPA filter will be required.

When HDR employees are exposed to atmospheres containing toxic levels of contaminants or low oxygen concentrations, and engineering controls cannot eliminate these hazards, HDR employees will be required to wear respiratory protection. HDR will provide training in the selection, use, care, and limitations of respirators for individuals that will enter any area where the use of respiratory protective equipment is required.

Unprotected exposure to atmospheres containing toxic levels of contaminants or low oxygen concentrations can result in temporary or permanent difficulty breathing, illness and possible death.

1.2 Hazard Control

Engineering controls should always be the primary method of controlling employee exposure to airborne contaminants (i.e., eliminate the contamination source, ventilate the area, erect barriers, implement remote handling methods, etc.). Respirators shall be worn when engineering controls are unsuccessful and:

- The established OSHA Permissible Exposure Limits (PEL) and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV) or other applicable exposure limits for a particular material is approached or exceeded, as known by history or measured by direct reading and/or integrated air sampling; OR
- The workplace atmosphere is oxygen deficient (less than 19.5% oxygen by volume). Normal
 uncontaminated atmosphere contains 20.9% oxygen. Note: The Director of Safety must preapprove any entry into an oxygen-deficient atmosphere, OR
- Deemed appropriate by the Director of Safety or designee.

1.2.1 Respirator Types and Selection

There are two major classes of respirators – atmosphere-supplying and air purifying. Respirators within these two classes may be further divided by the type of hazard they protect against – gases/vapors, particulates, or Immediately Dangerous to Life or Health (IDLH) atmospheres. Consult with your OSC, Corporate Safety and/or someone with knowledge in respiratory protection in order to select the appropriate respirator for the hazards you will face. You must select and use the appropriate type of respiratory protection! Only NIOSH-approved respirators may be worn by HDR personnel.

1.2.2 Fit Test

Prior to an initial use of all respirators that fit tightly against the face, and at least annually thereafter, all wearers must be given a qualitative fit test to ensure proper fit is obtained. The fit test is specific to the respirator; therefore, a new fit test must be conducted whenever a different respirator face-piece is used. Thus, it is best if each employee has their own face-piece, rather than attempt to use shared respirators. Fit tests will be obtained from local safety equipment vendors (always at the time of initial purchase, and then just prior to a new project requiring the use of a respirator). The fit test procedures shall follow the protocol in Appendix A of 29 CFR 1910.134, Respiratory Protection.

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1.2.3 User Seal Check

For all tight-fitting Air Purifying Respirators (APR), employees shall perform a user seal check each time they put on the respirator, using both a negative pressure and a positive pressure seal check. The user must perform these checks to verify that a proper face-piece-to-face seal has been obtained. To perform these checks, follow the instructions in HDR SH&E Procedure #009, Respiratory Protection or the respirator's manufacturer recommended procedures. A worker may not enter a contaminated area if conditions prevent a good seal of the respirator face-piece to the face.

Respirator Inspection

All respirators shall be inspected by the user before each use and during cleaning. A record of respirator inspections, including date, employee signature and inspection results shall be completed daily for routine wear, and following the use of any emergency respiratory equipment.

Cleaning of Respirators

Respirators assigned and worn by one individual must be cleaned after each day's use (except limited use or disposable respirators). Emergency-use, visitors', or multi-assigned respirators must be cleaned and disinfected after each use. A respirator spray disinfectant can be used to disinfect between continuous uses, but for cleaning and sanitizing after each day's use – disassemble, use mild liquid soap solution and warm water, dry, and reassemble. Store out of the contaminated environment in a sealed container – large zip-lock bags with the owner's name on it work well.

1.3 Medical Clearance

Using a respirator is stressful – it places a physiological burden on employees that will vary with the type of respirator worn, the workplace condition, and the employee's medical status. Prior to assigning personnel to perform tasks requiring the use of respirators, the employee must be medically evaluated to determine suitability for safely wearing a respirator. Contact Corporate Safety to schedule a medical evaluation.

1.4 Training

Prior to wearing a respirator, HDR personnel must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SH&E Procedure #009, Respiratory Protection
- HDR University eLearning Respiratory Protection (annual requirement)
- Hands on training with the specific respirator

1.5 Comfort/Dust Mask Exemption

Respirators that are designed for a limited or one-time use, where the face-piece is the filter, are called comfort or dust masks. In cases where an employee chooses to wear one for personal reasons (e.g., allergies, hypersensitivity to some agent, prevention of inhalation of nuisance dust); but where no overexposure is anticipated, they are exempted from all the requirements specified here IF these conditions are met:

- A National Institute of Occupational Safety and Health (NIOSH) approved mask is selected and worn, and
- The wearer reads and provides Corporate SH&E with a signed copy of the Respirator Voluntary Use Acknowledgement Form.



1.6 Applicable Forms

- In cases where an employee chooses to wear a comfort or dust mask for personal reasons the employee must complete the Respirator Voluntary Use Acknowledgement Form.
- The Respirator Inspection Checklist is a checklist created to assist the HDR employee in making a thorough examination of the respirator he or she is using.

A. SLIP, TRIP, & FALL PREVENTION

1.1 Description

Slips, trips, and falls (S/T/F) result from encountering an unexpected change in the walking surface (change in frictional resistance or level) resulting in a loss of balance. Most of these accidents are preventable through proper housekeeping, correct walking surfaces/footwear, and simple precautions.

1.2 Hazard Control

Common project site sources of S/T/F hazards are:

- Stepping out of vehicles onto uneven terrain/loose gravel/ice realize you are shifting your
 weight from a sitting to a standing posture, and transferring this weight onto the new surface.
 Do this carefully, especially in winter in a parking lot. Initially reduce stride and assess.
- Carrying items while walking. This has several dangers holding any items reduces your
 ability to use your hands/arms to recover from a momentary loss of balance, and carrying a
 large item, such as a box, impedes your view of the walking path in front of you.
- Embarking/disembarking from boats. Very common source of injury. Docks are stationary and
 at a higher elevation, while boat floors are rocking with wave action, and have clutter/seats,
 etc. in them, reducing the targeted landing spot for feet. Shifting your weight to leave a dock
 and embark into a small boat is especially dangerous. Performing a one minute stretch
 (hamstrings, hips, knee bends, low back) for increased flexibility (aids in balance) is a very
 good idea before embarking.
- Climbing ladders and walking on elevated grating-type (expanded metal) surfaces. These freeze easily and hide the presence of ice.

Most S/T/F accidents can be avoided through:

- Awareness recognize trouble spots/uneven terrain and avoid where possible. Watch your pathway while you walk.
- Housekeeping do not stack materials/cords in walkways, close file drawers, apply de-icer, or manually remove on walking and climbing surfaces – don't create a S/T/F hazard!
- Wear proper footwear many serious injuries result from ankle turns. Wear over-the-ankle boots, laced up snugly. Select soles that offer good traction (lugged, not smooth) and are made from high frictional resistance materials (rubber-like compounds). These two characteristics will prevent many falls and injuries, due to uneven terrain.
- Stride dynamics Slips generally happen when an employee walks across one surface with a
 higher frictional resistance (e.g., carpet), which sets his/her stride at a fast pace, and then
 steps with that same stride onto a new surface with a lower resistance (marble, wet floor).
 Reduce the distance of your stride (space between steps) and slow your pace when first
 encountering a new walking surface almost walk gingerly, until you have ascertained what



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pace the surface friction will support. Keep toes pointed a little outwards to enhance stability; make wide turns around corners. The ultimate stride goal in slick conditions is to keep your center of gravity directly between your legs, and your legs as close to vertical under your trunk.

 Avoid jumping or running on project sites – both actions increase both the likelihood of, and the extent of injury suffered as a result of, a S/T/F.

1.3 Training

Prior to field work, HDR personnel must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SH&E Procedure #003, Slip, Trip, and Fall Prevention
- HDR University eLearning Slip, Trip, and Fall Prevention

A. TRAFFIC/HEAVY EQUIPMENT SAFETY

1.1 Description

Heavy equipment will be present on the site to load containers for shipment. HDR personnel will be onsite observing activities.

1.2 Hazard Control

Performing work within, or adjacent to, traffic corridors or construction sites exposes HDR employees to being struck-by moving traffic and heavy equipment. Employees may also be pinned by or caught in between moving vehicles and site structures or the rotating superstructure of a crane.

1.2.1 Traffic Control

The project manager will appoint an HDR "employee in charge" to supervise HDR employees, sub contractors, and sub-consultants during the activity exposing the project team to moving traffic hazards.

The employee in charge must have a working knowledge of all guiding documents (relevant Federal and State directives such as the MUTCD, contract documentation such as the Traffic Control Plan, and HDR SH&E Procedure #017, Traffic Safety).

The employee in charge must conduct a job briefing at the beginning of each shift and as required during the shift. At a minimum, the job briefing must address work to be performed, individual responsibilities, and pertinent SH&E issues to include remaining out of the flow of traffic at all times unless specifically planned for with a traffic control plan.

Any state/provincial/municipality and/or Manual of Uniform Traffic Control Devices (MUTCD) guidelines should be reviewed and followed prior to going into the field.

Those HDR employees subject to traffic on a project shall follow the project's Traffic Control Plan (TCP), if one exists.

Barricades/signage located within construction zones shall not be tampered with, removed, or relocated. If any traffic control devices are observed in an altered position (cones down, barricades knocked over, etc.), report the need for repositioning to the site employer responsible for TCP implementation.





1.2.2 Heavy Equipment

HDR employees should receive and understand the communication protocol used by equipment operators on the job site. This information should be discussed at an initial tailgate safety briefing attended by HDR and the equipment contractor, at a minimum.

ALWAYS maintain a safe distance from heavy equipment – each piece has unique large blind spots that prevent the operator from seeing you (stay 15 feet away or 1/2 x the length of the equipment, whichever is greater).

NEVER approach equipment without obtaining eye contact with the operator and a signal to proceed.

ALWAYS stay outside the swing radius of rotating equipment (cranes, etc.). This is the source of frequent, massive injury.

Stay away from all pinch points - places where machine parts move against each other.

Always look up when entering a work area to see and stay clear of overhead hazards – swinging loads, power lines.

1.3 Personal Protective Equipment (PPE)

- High-visibility safety vest ANSI Class 2 (minimum) or Class 3 (preferred (Class 3 Uniforms required when working at night on Right of Ways))
- Hard hat
- Protective toe boots
- Safety glasses

1.4 Training

Prior to field work, HDR personnel with exposure to traffic/heavy equipment must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SH&E Procedure #017, Traffic Safety
- HDR University eLearning Traffic Safety Awareness
- HDR employees assigned to design-build projects will be given additional project-specific training prior to exposure.

1.5 Applicable Forms

The *Traffic Safety Checklist* must be completed for all work near moving traffic to ensure safety measures and regulations are met.

A. FALL PROTECTION

1.1 Description

Glass and other television materials have been stacked within the building which may present a fall hazard as the contractor removes these items from the building. To reach some of the materials, a man-lift may be required. HDR personnel should not be on a man-lift; however, if required to complete our observations, the following requirements should be adhered to for fall protection. Care should be taken to avoid being within the facility if heavy equipment is operating.



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Potentially hazardous situations include falling from a height of six feet or more on a job site, being struck by an object falling from overhead, and/or falling into holes on elevated work surfaces. Any of these can result in serious accidents, injuries, or death.

1.2 Hazard Control

1.2.1 Guardrail Systems

Guardrail systems are the preferred engineering control to eliminate falling from height. Note: The use of a passive engineering control, such as a guardrail system is always preferable to active systems such as nets or fall arrest systems, because passive systems prevent falls from occurring, whereas active systems merely prevent the fall from becoming injurious.

- Do not lean on guardrails or rest equipment against guardrails. Guardrails are designed for fall prevention, not a resting area.
- Report any observed guardrail system defects (e.g., broken wood railing, slack or missing
 wire in rope railing) to the controlling employer on the job-site. If not promptly corrected,
 complete written Unsafe Condition Report, submit to controlling employer and warn all HDR
 and HDR sub staff to remain at least ten feet away until corrected.

1.2.2 Nets

Nets may be installed by contractors along the sides of bridges or high-rise structures as a passive fall safety system. Nets do not stop you from falling; they just stop you on your way down. If netting is used, the following apply:

- Maximum opening in the net is 6" x 6";
- Contractor has to perform a drop test every time a net panel is moved, or every six months
 the panel is used during the project. A drop test consists of a bag of sand weighing 400 lbs.,
 being raised to the maximum height above the net that exposed workers will be working, and
 dropped. If the net holds and stops the bag, it has passed;
- Maximum fall distance into a net allowed is 30 feet.

1.2.3 Personal Fall Arrest Systems (PFAS)

Personal Fall Arrest Systems may be used when guardrails are not installed. Components of a PFAS include a body system (harness); connecting device (rope or web lanyard, shock absorbing lanyard, self-retracting lifeline); and a tie-off or anchorage point (eyebolt or beam, cross-arm strap connector, horizontal lifeline), with a minimum tensile strength of 5,000 lbs. per worker.

All components of a Personal Fall Arrest System must be routinely inspected for defects (look especially for cut fabric, deformed grommets, or ripped stitching) and must be replaced after five years of use (see HDR SH&E Procedure #012, Fall Protection).

Preferably, each HDR employee should be assigned their own harness, so they may remain sized correctly for multi-day usage. Likewise, it is strongly recommended that HDR employees use HDR provided PFAS components rather than rely on the PFAS equipment of contractors; the history of which is unknown.

1.3 Covers

Holes (including skylights) in walking/working surfaces that present a potential for employees to trip, drop tools into, or actually fall in, are serious slip/trip hazards and must have either a guard placed around, or be covered. Covers (usually plywood) must be secured against displacement and have a

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warning written on it, so workers will not mistake it for trash. Report any observed open hole to controlling employer for correction.

1.4 Falling Object Hazards

Employees working in an area where falling object hazards exist must wear hardhats.

1.5 Training

Prior to field work, HDR personnel must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SH&E Procedure #012, Fall Protection
- HDR University eLearning Fall Hazard Awareness (required for employees that could
 encounter fall hazards but do not have to work at heights and can avoid the hazards)
- Fall Protection Training (required for employees that work at heights)
- Note: Use of an alternative fall protective system, such as aerial lift man-baskets or cranesupported personnel platforms, requires topic-specific training.